DOCUMENT RESUME

ED 147 092 RC 010 237

AUTHOR Nutting, Paul A.; And Others
TITLE Studies in Ambulatory Care Quality Assessment in the Indian Health Service. Volume I: Overview of the Methodology.
INSTITUTION Health Services Administration (DHEW/PHS), Tucson, Ariz. Indian Health Service.
PUB DATE Sep 77
NOTE 84p.; Best copy available

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS *American Indians; Content Analysis; Data Analysis; *Delivery Systems; Efficiency; *Evaluation Criteria; *Evaluation Methods; Guidelines; Health Services; *Measurement Instruments; *Medical Care Evaluation; Methods Research; Pilot Projects; Program Effectiveness
IDENTIFIERS Ambulatory Care; *Indian Health Service

ABSTRACT

Describing the methodology by which the quality of ambulatory health care in the Indian Health Service (IHS) might be measured, this report presents a brief review of the literature; discusses design decisions basic to the methodology; presents a pilot study; and presents examples of process maps, indicators and adult criteria, and data collection instruments. The design decisions are identified as follows: the object of attention is ambulatory care (because it: is the primary IHS mode; is appropriate for the study of patient education, primary education, screening, early diagnosis, treatment, and follow up; and is a fertile area for quality appraisal research); the dimension of quality measured is effectiveness; the content of the evaluation includes measures of process and outcome for a group of representative health problems; the yardsticks employed to measure quality are explicit patient care criteria; the perspectives from which measurements are taken are both patient and provider-based; the methods of data analysis include aggregation of individual results and isolation of exceptional results. The methodological procedures are identified as follows: select a group of health problems representative of the major health problems in the community; develop process maps; list problem-specific criteria and translate into indicators; define criteria for each indicator; identify material to be audited; define the length of study period; and employ instruments (graphic algorithms and data collection forms for those tracers for which provider-based indicators are used). (JC)

Documents acquired by ERIC include many informal unpublished materials not available from other sources. ERIC makes every effort to obtain the best copy available. Nevertheless, items of marginal reproducibility are often encountered and this affects the quality of the microfiche and hardcopy reproductions ERIC makes available via the ERIC Document Reproduction Service (EDRS). EDRS is not responsible for the quality of the original document. Reproductions supplied by EDRS are the best that can be made from the original.

RC 06-01-78

ED147092

STUDIES IN AMBULATORY CARE

QUALITY ASSESSMENT IN THE

INDIAN HEALTH SERVICE

Volume I: OVERVIEW OF THE METHODOLOGY

ORD-SS1871
September 1977

Paul A. Nutting, M.D.

Gregory I. Shorr, M.D.

Lawrence E. Berg

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

20 FDRS
M. 49-54
56-58
62-67
are 11X8 1/2

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Office of Research and Development
Indian Health Service
P.O. Box 11340
Tucson, Arizona 85734

RC010237

ABSTRACT

This report describes a method to assess the quality of ambulatory health care. A brief review of the literature is presented and the design decisions basic to the methodology are discussed.

Application of the assessment strategy is completed in stages. First a set of health problems is selected to represent the major health problems of the community. A process map (or clinical algorithm) is constructed for each health problem to describe the expected process of health care. Process maps specify necessary elements of prevention, diagnosis and treatment, and they define acceptable health outcomes.

Criteria, which are the benchmarks of effectiveness, are translated into audit questions (called indicators) which are the actual measures of quality. Some indicators are provider-oriented and focus on health worker performance. Other indicators are patient-oriented and track individuals through the problem solving process to determine the distribution; continuity and end results of care. Throughout, emphasis is placed on local staff involvement during all phases of planning and implementation. Special attention is given to reviewing the operations of the health system as a whole, as well as the performance of individual providers.

A pilot study of this methodology is briefly described. Subsequent reports will present and discuss results from the pilot studies.

INTRODUCTION

Recent years have witnessed a growing concern among health professionals, consumers, medical organizations, and the federal government for improvements in the quality of health care. The Joint Commission on Accreditation of Hospitals (JCAH) has been the major operational quality assurance program since 1952, however quality assurance activities have been mandated more recently under two federal laws. The PSRO legislation of 1972 (P.L. 92-603) directs that medical care evaluations are to be pre-requisites for reimbursement of costs payable under Medicare and Medicaid. In 1973 the Health Maintenance Organization (HMO) Act (P.L. 93-222) required quality assurance activities in all federally supported HMO's.

Much of the work in quality assurance has been directed toward inpatient care, while the state-of-the art of ambulatory care quality assurances remains in its infancy. Most of the existing quality assurance mechanisms focus on institutions and examine the performance of the facility or its providers for those patients who utilize the facility, rather than examining the quality of the health care received by the recipient community.

The Indian Health Service (IHS) is charged with the responsibility of assuring comprehensive health services to defined communities of American Indian and Alaskan Natives. This responsibility is discharged through a number of local IHS Service Units designed to function as a comprehensive health care system. Health services are provided through a combination of inpatient, outpatient, and field activities directed toward the total

care of the patient in the context of his environment. Consistent with its responsibility, each Service Unit directs its effort toward environmental sanitation, health education, preventive practices, and well patient surveillance in addition to traditional modes of acute and chronic care. In recent years the Tribal and Native organizations have accepted increasing responsibility in manning and managing segments of its health care program. As a result, each local health care system has become increasing complex and existing mechanisms of quality assurance are not entirely adequate to meet the existing demands for quality control.

The Office of Research and Development of the Indian Health Service has been examining methods to assess the quality of care for ambulatory patients with three basic performance criteria in mind. First, the method must be easily and economically applied. Any method that requires additional resources or significant systems description is likely to be viewed as a special study rather than a routine periodic application of a genuine systems component. Second, the method must identify areas of deficiency in health care and suggest adaptive programs to correct deficiencies. Any method that merely attempts to identify care or "good" or "bad" is not likely to lead constructively to improved health care. Finally, the method must view health care from the community perspective and examine the health care received by the community rather than focusing entirely on the care provided by any given facility.

This report presents an overview of an evolving methodology for assessing ambulatory patient care currently under development in the IHS. The intent is neither to present a comprehensive review of the quality assurance literature nor to describe an ideal method that is consistently followed. Rather, it offers some empirically derived guidelines for examining the quality of ambulatory health care, briefly describes an extensive field test design, and comments on the feasibility of the approach. Subsequent reports will describe the results of the field application of the methodology.

METHODOLOGIC DESIGN DECISIONS

At the outset it is useful to review the fundamental design decisions that were made in the design of the quality appraisal method.

1) What mode of health care delivery is assessed?

The majority of emphasis in quality assessment programs has centered on hospital care. Methods for specifically evaluating outpatient and field health care are not as well established. Ambulatory care was chosen for examination for three reasons. First, it is the primary mode of care for patients in the Indian Health Service. Second, it is an appropriate arena to study patient education, primary education, screening, early diagnosis and treatment, and follow-up. Third, it is a fertile area for quality appraisal research.

2) What aspect of quality is measured?

The term "quality" as it pertains to health care, is multi-faceted. In a classic paper written in 1953, Lee and Jones[1] identified eight dimensions of quality care including comprehensiveness and emphasis on prevention. In later review, Klein[2] categorized 16 aspects of quality such as patient understanding and continuity of care. More recent discussions have focused on efficiency[3] and acceptability.[4]

The principal aspect of quality that is examined in this methodology is effectiveness; i.e., the ability to solve and prevent health problems. Effectiveness was selected because it is the sine qua non of quality care. Other dimensions are examined indirectly.

3) What is the content of the evaluation?

According to Donabedian[3], the content of most health care evaluations can be divided into three categories: review of structure, process, and outcome. Appraisal of structure is the least direct method and involves a review of the "settings and instrumentalities" available for the provision of health care. Factors such as organizational policies, physical plant, and staff qualifications are monitored. It is assumed that if the structure is adequate, effective care will be delivered. A more direct approach is to study the process of care; i.e., what is done on behalf of patients. Process components includes primary prevention, screening, diagnostic work-up, treatment, and follow-up. It is evaluated by determining if necessary services are provided and if services provided are appropriate. The most direct approach to assessing effectiveness is to measure outcomes, which are the results of care.

Several different types of outcomes may be measured. Williamson[5] identifies diagnostic outcomes which "represent the data required to determine the need for care, specify therapy and prognosis", and therapeutic outcomes which "represent the health status of a patient following treatment." He also distinguishes between final outcomes and intermediate outcomes.[6] The final outcome describes a state in which "the patient's health status is stabilized at a definable level." The intermediate outcome is based on pathophysiologic variables which have a direct relationship to the end results, but are measured prior to stablization.

Sanazaro[7] differentiaties between patient end results and process outcomes. The former refers to changes in signs, symptoms and functional capabilities, while the latter refers to changes in patient cognition which affects attitudes, comprehension and compliance. Decker[8] describes administrative outcomes including "the utilization of health services, waiting times and other volumetric measures of managerial interest" and economic outcomes which specify "costs generated by services provided."

The content of this evaluation method is limited to measures of process, diagnostic outcome, and intermediate therapeutic outcome for representative health problems. By evaluating process and outcome simultaneously, it can be directly determined if health problems are being prevented, diagnosed and solved, and causes of observed deficiencies can be pinpointed. Measurement of administrative economic and process outcomes require specialized data collection techniques and are not included in this methodology.

4) How is quality assessed?

Two categories of judgments have been described for determining the quality of care: implicit and explicit. According to Brook[9], implicit judgment is based on subjective impressions of the "adequacy of the process" and the "possible improvability of the outcome." Explicit judgments are based on objective determinants of quality care which are documented ahead of time.

Patient care criteria serve as yardsticks for explicit appraisal.[10] These are elements against which process and outcome can be measured. Each criterion is associated with a performance standard which defines the goals of acceptable compliance in a defined population, and an indicator which specifies what information is required to apply the criterion. For example, consider the criterion, "Pregnant women should have a urinalysis in the first trimester." The performance standard adopted by a health system might be "a minimum of 90% compliance." The resulting indicator asks, "What percent of pregnant women have a urinalysis in the first trimester?"

In this method, patient care criteria and performance standards are used to make judgments of quality. The results from this type of approach tend to be more uniform than those generated by implicit judgments.[9] Also, explicit judgments can be made by trained para-professionals or computers. This may reduce evaluation costs and improve feasibility of maintaining large sample sizes for case review.

5) <u>From what perspectives are measurements taken?</u>

Two viewpoints are used for patient care appraisal. In one, attention is focused on the patient population so that the continuity, distribution, and end results of care can be measured. In the other, attention is focused on the providers so that the quality of their performance can be assessed. Two classes of indicators are derived from these perspectives. Population-based indicators ask what happens to the patient population; e.g., "What percent of the population is

being screened for hypertension?" or "What percent of infants received all immunizations by 13 months of age?" They are expressed in the following units: percent of patient population in compliance with the criteria for effective care.

Provider-based indicators ask about the delivery of health services; e.g., "On what percent of laceration follow-up visits does the provider document wound healing?" They are expressed in the following units: percent of study encounters or cases in which the provider complied with criteria. Both perspectives are incorporated in this approach.

6) How are the results analyzed?

Results from discreet cases or encounters can either be aggregated or studied individually. Aggregated data offer a view of the overall level of care. Isolated results provide a useful starting point for in-depth case review. Here both methods of data analysis are employed in order to achieve a balanced picture at the mainstream of care and the exceptional cases.

In summary, these design decisions were made:

- The object of attention is ambulatory care rather than hospital care.
- The dimension of quality measured is effectiveness.
- The content of evaluation includes measures of process and outcome for a group of representative health problems.

- The yardsticks employed to measure quality are explicit patient care criteria.
- The perspectives from which measurements are taken are both patient-based and provider-based.
- Methods of data analysis include aggregation of individual results and isolation of exceptional results.

OVERVIEW OF THE ASSESSMENT METHODOLOGY

Given the basic design decisions listed above, the development of a patient care evaluation is carried out in a stepwise manner. First, a group of health problems are chosen to represent the major health problems of the community. Selection is based on the prevalence and potential severity of the health problem as well as the effectiveness of available strategies.

Kessner[11] recommends the following guidelines for selecting representative health problems:

- Each problem should be relatively well-defined and easy to diagnose.
- Each should have a significant, measurable functional impact.
- The techniques of medical management should be well defined for at least one of the following: prevention, diagnosis, treatment and rehabilitation.
- The outcome should vary with the utilization and effectiveness of care.
- The condition should have a high prevalency rate.
- The epidemiology of the problem should be well understood.

Although there is no proof of commonalities between tracers and the rest of the health problems in the system, the use of tracer conditions should not be abandoned. Conditions which are prevalent and have a large effect on the health care system will be somewhat representative by virtue of their weight and impact. We, therefore add two criteria to those of Kessner for selecting tracers.

- As a group, the diseases being monitored should cover all clinical functions including primary prevention, screening, diagnostic evaluation, treatment, follow-up, and well patient surveillance.
- As a group, they should cover a broad spectrum of conditions; e.g., acute/chronic, adult/pediatric, physical/mental, surgical/medical, remedial/preventive. Table 1 shows the relationship between the tracer conditions used in the pilot study to the clinical functions of health care.

After selecting a set of tracer conditions, each is reviewed in detail to determine which areas will be examined in the assessment. Graphic models of the health care process (process maps) are useful in defining the scope and content of the assessment for each tracer.

The development of a process map for iron deficiency anemia serves as a useful example. First, a simple diagram may be drawn to show the basic sequence of clinical functions (Figure 1). Patients either pass all the way through the process or drop out. The map in Figure 1 may be employed for some basic audit designs, but it does have obvious limitations. For one, not all patients who might enter the sequence will have anemia. These individuals do no need to pass through distal elements. Moreover, the map does not distinguish between mass screening and selective screening, and it wrongly suggests that follow-up is a necessary condition for a successful outcome. Finally, all pathways on the map lead to dead ends.

If audit planncers desire a more realistic representation of the process, a revised map like the one in Figure 2 can be constructed. In this example, new pathways are introduced, and routes are contingent upon diagnostic and therapeutic results. Also, the new map describes a closed loop system. Those screened negative are referred for periodic rescreening, treatment failures are scheduled for additional therapy, and so on. If the planners want to differentiate between the various causes of iron deficiency anemia (e.g., pregnancy, dietary deficiencies, chronic blood loss, etc.), if they want to cover the diagnosis and management of adverse drug reactions, or if they want to isolate the management of initial episodes of anemia from subsequent episodes, then additional branches can be added to the sequence.

There are no absolute rules governing the design of process maps; however, the following suggestions might be made. First, a conscientious effort should be made to include all major clinical functions. Second, the map should include more closed loop pathways than dead ends. Finally, branches should be included whenever the potential benefits seem to outweigh projected costs for planning and auditing. The process maps for each tracer constructed for the pilot study are shown in Figures 2 through 9 (Appendix A).

Next, a list of problem specific criteria are developed and translated into indicators which serve as the basis for the audit protocol. The indicators consist of three types. Population-based indicators express a percent of the total community which has received a particular health

service. This class of indicators characterizes the extent to which the health care system is meeting the needs of its total patient population. By tracking specific patient cohorts they describe the continuity, distribution, and appropriateness of health services received. This measure of system performance might be reflected by population-based indicators such as:

1. What percent of the community has been adequately screened for hypertension?
2. What percent of infant in the community have been adequately immunized against poliomyelitis?
3. What percent of patients diagnosed with otitis media, received adequate antibiotic therapy?

Provider-based indicators express a percent of contacts between patients and the health care system in which particular health services were provided. This class of indicator characterizes the adequacy of health services provided when patients utilize the health care system, provider-based indicator data can be aggregated to characterize the performance of individual providers, provider disciplines, or all providers in the system. This performance measure might be reflected by indicators such as:

1. What percent of patient visits due for a screening blood pressure resulted in a blood pressure recording?
2. What percent of infant visits due for poliomyelitis immunization resulted in an immunization?

3. What percent of patient visits including a diagnosis of otitis media, was an appropriate antibiotic prescribed and a follow-up visit scheduled at an appropriate referral?

Finally, health status indicators express the percent of patients for whom a change in health status has been documented. One should be cautioned against equating health status indicators with measures of incidence or prevalence since the latter requires a random sampling of the population. Health status indicators on the other hand often reflect change in health status of selected patient group; e.g., only those who were followed-up.

The process maps of Figures 2 - 9 (Appendix A) show the points in the process of care where indicators are measured. The indicators are analogous of sensors or probes which monitor the function of complex machinery. As a group they pinpoint the areas of strength and weakness in the process of health care.

Some population based indicators are analogous to "flow meters" and can be constructed in a sequence in order to examine the continuity of care. Referring to a process map, such as the one in Figure 7 of Appendix A, the patient population can be seen to percolate down through a variety of pathways. If flow meter indicators are placed along the major routes, they will measure the distribution and continuity of health services. For example, if an indicator is placed at the entrance of the screening element, the results will show how well screening services are distributed among the at-risk population. These indicator sequences may focus on any of the clinical functions of the health care process

and can express "continuity" as a series of conditional probabilities based on empirical data.

By examining continuity of care in this way, the assessment methodology can identify discontinuities in health care and distinguish between those related to provider-behavior and those related to patient utilization of services. In general a required health task is completed only when three basic steps occure. First, there must be contact between the patient and an appropriate provider. Second, the need for that health care task must be recognized, and finally the task must be performed. Conventional wisdom would suggest that making contact with the health care system for services is generally the responsibility of the patient. The recognition function is the shared responsibility of the patient, who may reflect need in his chief complaint, and the provider who reviews the patient's record. Finally, the performance of the task is the responsibility of the provider. The tracers whose process maps appear as Figure 7, 8, and 9 (Appendix A) employ indicator sequences designed to examine the continuity of care in this way.

The next step in designing an assessment methodology involves defining criteria for each indicator. Professional guidance from consultants or local experts can be solicited to help develop the initial criteria list. An exhaustive literature search is often necessary to validate assessment criteria. Even if criteria are borrowed from pre-existing criteria lists, they must be adopted for local circumstances. This burden can be relieved by expert consultants who are familiar with the literature.

In generating criteria it is useful to consider the suitability of criteria for auditing the quality of care. Suitability is a function of the expected documentation patterns, scientific validity, and potential constructiveness of the proposed criteria.

- With respect to documentation, audit specific data, which are used to determine compliance, should be reliably recorded in the medical record. In general, prescriptions, measurements, lab results and diagnosis are well documented, but historical data, physical findings (especially negative findings), and educational treatment plans are not.
- With respect to scientific validity, proposed criteria should be supported by the results of controlled clinical studies. If this is not possible, consensual support should be obtained from the local professional community.
- With respect to constructiveness, effective corrective action programs should be available at the local level to assure compliance with the proposed criterion. It is a waste of time to measure elements of care which cannot be changed.

Local providers should be encouraged to inspect and modify the proposed criteria list. When they are not given the opportunity to internalize the criteria which will be used to judge their performance, the resulting quality assessment effort can be like a major organ graft that does not take. Initially, there is a great deal of concern and anxiety, and then there is a relentless process of rejection. This "host reaction"

can be prevented by promoting local provider involvement in generating the assessment criteria.

The indicators and criteria generated for each tracer condition in the pilot study are shown in Tables 3 through 10 of Appendix B.

After the local staff gives formal approval to criteria, performance standards and indicators, the evaluation can begin. The first task is to identify the material which is to be audited. Usually, charts are selected on the basis of demographic information or diagnoses. Claims forms and disease registries can be used to find the appropriate records. A sample as small as 50 charts is usually adequate to measure most indicators,[12] however, larger samples will be needed if multiple statistical breakdown of results are anticipated. If more clinic material is available than is required for auditing purposes, a representative sample of records can be chosen using a random method.

Next, the length of the study period is clearly defined. Longer time frames will provide more audit specific information; however, if the study period is too extensive, specificity is diminished, and the chance for rapid performance feedback is lost. Evaluations which cover consecutive six to twelve month periods are practical for most health problems. The study of acute, seasonal illnesses may require a shorter time frame, and measurements may cover non-consecutive study periods.

Chart auditors can be drawn from a wide variety of occupations. Medical records librarians, clerks with a knowledge of medical terminology, laboratory personnel and college students majoring in health related

professions have all performed well in chart review.[12] Training objectives include developing an understanding of pertinent medical terminology and a knowledge of where audit specific information is located in the record. Prior to the audit, trainees in our program reviewed at least ten charts per indicator with a qualified health professional.

Two instruments are useful for data collection. The first is a graphic algorithm or abstractor's map[13] which summarizes the elements upon which judgments are based. Auditors follow the pathways in the map as a guide to interpretation of data in the medical record. The maps can also serve as the basis of computer programs for automated evaluation system,[14] or as the data collection instrument for tracers used to assess continuity of care. In the pilot study, the data collection instruments for hypertension, non-deficiency anemia, and urinary tract infections were patterned closely after the process map. They are shown in Appendix C. The second instrument is the data collection form for those tracers for which provider-based indicators are used. These are included in Appendix C.

Large evaluations can be streamlined by conducting the chart review in stages. First, health outcomes are assessed. If there is compliance with outcome performance standards, additional auditing is unnecessary. If outcome standards are not met, a process audit can be undertaken to determine where operations have broken down. The initial objective of the process audit is to confirm that all major clinical functions are present, and that there is continuity between them. If major functions are absent,

or if continuity is poor, additional auditing is not indicated until corrective action has been taken. If, on the other hand, major functions are present, continuity is good, but the outcome is poor, the deficiency is probably due to inadequate provider performance rather than a general system failure. A highly specific set of provider-based indicators is required to study this type of problem.

The validity of the review process should be periodically re-examined. A health professional other than the original chart auditor should check 10% of the indicator measurements in a single blind study. For our purposes, a minimum of 80% reproducibility has been considered adequate.

THE PILOT STUDY

A pilot study has been implemented using the tracers, criteria, indicators, and data collection instrument described. Assessment of the quality of ambulatory care was completed in six Service Units of the IHS, three rural private practices, and two large Health Maintenance Organizations. The results of the assessments will be described in subsequent reports.

Cost Considerations

The costs of implementing this ambulatory care quality assessment methodology can be reasonably estimated from experience in the pilot sites, and are shown in Table 2. In the pilot study there was a single study design utilized in all the sites and therefore the design costs could be spread over a total of eleven sites. Likewise an additional Service Unit that wished to use exactly the same methodology could do so without investing the manpower specified under the design phase. However, the manpower requirements for implementation would necessarily be duplicated in each study site.

In the pilot study, a variety of disciplines were found to serve quite well as data collectors, including medical records personnel, undergraduate students in health-related studies, medical students, and nursing personnel. Local manpower availability should probably dictate who is used as a data collector, and in our experience the method allows a great deal of flexibility.

Data Reliability

A test of data reliability was performed by using an independent physician auditor who reexamined a sample of medical record previously reviewed by each data collector. In all cases there was at least an 85% agreement between the physician standard and the data collector.

Data Validity

A deserves mention that this methodology examines the medical record rather than direct observation of the health care providers performance. Therefore assessments of the quality of care provided are in reality assessments of the quality of care as documented in the medical reocrd. This methodologic problem in quality assessment has been noted by others[15,16] and certainly is not solved by this study design. The methodology does, however, emphasize the need to select indicators (and their criteria) which are reliably documented in the medical record.

A parallel line of reasoning would suggest that essential items in the process of care should be reliably documented in the medical record, particularly in health care settings involving several providers. If the elements of health care incorporated into indicators are considered as essential to good health care, then documentation of those items in the medical record should also be considered as essential to good care. Therefore a quality assurance mechanism that improves the documentation of such essential items could be considered as achieving an improvement in the process of health care.

DISCUSSION

An eclectic approach to patient care evaluation has been described. It is intended for monitoring individual provider performance, the overall continuity and distribution of services, and impact on patient health status. Information is gathered from both population-based and provider-based perspectives, and judgments rest on explicit criteria. Results distinguish between health worker deficiencies and health system deficiencies. Ultimately, the method supports an holistic approach to quality assurance activities which includes peer review, provider self-assessment and education, management and planning. Despite these features, a number of important evaluation topics such as acceptability, accessibility and affordability, are not given direct consideration. Methods for assessing these areas are beyond the scope of this paper.

One final caveat is offered. The benefits of patient care appraisal, for both providers and recipients of health services, are proportional to the amount of effort and commitment that goes into evaluation efforts. Our experience suggests that a significant amount of work is required to achieve a measurable impact. We seriously doubt that half-hearted, isolated attempts at evaluation will have any long term impact on the quality of care. Furthermore, we feel that audits which do not have the support of the local staff will almost certainly fail to produce constructive change. On the other hand, active participation by the local staff in designing the evaluation and interpreting the results, is the first

step in converting a health services delivery system into a dynamic, self-correcting system for the prevention and solution of health problems. Potential rewards are great.

REFERENCES

1. Lee, RI and Jones, LW, The Fundamentals of Good Medical Care, Publication of the Committee on the Costs of Medical Care No. 22, Univ. of Chicago Press, Chicago, 1933.
2. Klein, MW, Malone, M, Bennis, WG, et. al., Problems of measuring patient care in the outpatient department, J Health Hum Behav, 2:138, 1961.
3. Donabedian, A, A Guide to Medical Care Administration, Vol. II, Medical Care Appraisal - Quality and Utilization, American Public Health Association, New York, 1969.
4. Hulka, BS and Zyzanski, S, Scale for the measurement of attitudes toward the physician and primary medical care, Med Care, 8:429, 1970.
5. Williamson, JW, Evaluating quality of aptient care, JAMA, 218:564, 1971.
6. Williamson, JW, Outcome assessment for implementing quality assurance programs, In Quality Assurance of Medical Care - Monograph, Regional Medical Programs Service, DHEW, Publication No. HSM 73-7021, Washington, D.C., pp 313-328, 1973.
7. Sanazaro, PJ and Williamson, JW, End results of patient care - A provisional classification based on the reports of internists, Med Care, 6:123, 1968.
8. Decker, BD, Bonner, P, Israel, E, et. al. EMCRO Programs, National Center for Health Services Research and Development, DHEW Publication No. HSM 73-3017, Washington, D.C., 1973.

9. Brooke, RH, Quality of Care Assessment: A Comparison of Five Methods of Peer Review, National Center for Health Services Research and Development, DHEW Publication No. HRS 74-3100, Washington, D.C., 1973.

10. PSRO Program Manual, Office Professional Standards Review, DHEW, Rockville, MD, 1974.

11. Kessner, DM and Kalk, CE, Contrasts in Health Status, Volume 2: A Strategy for Evaluating Health Services, National Academy of Sciences, Washington, D.C., 1973.

12. Shorr, GI, and Nutting, PA, A population-based assessment of the continuity of ambulatory care, Med Care, 15:455, 1977.

13. Greenfield, S, Lewis, CE, Kaplan, SH, et. al, Peer review by criteria mapping: Criteria for diabetes mellitus, Ann Int Med, 83:761, 1975.

14. Shorr, GI, Nutting, PA, and Enos, ED, A computer system for assessing the quality of ambulatory care, DHEW, HSA, Indian Health Service, Office of Research and Development, Tucson, Arizona, 1975.

15. Osborne CE, Thompson HC: Criteria for evaluation ambulatory child health care by chart audit: Development and testing of a methodology, Pediatrics, 55:625 (Suppl.) Oct, 1975.

16. Wirtschafter DD, Mesel E: A strategy for redesigning the medical record for quality assurance, Med Care, 14:6B, 1976.

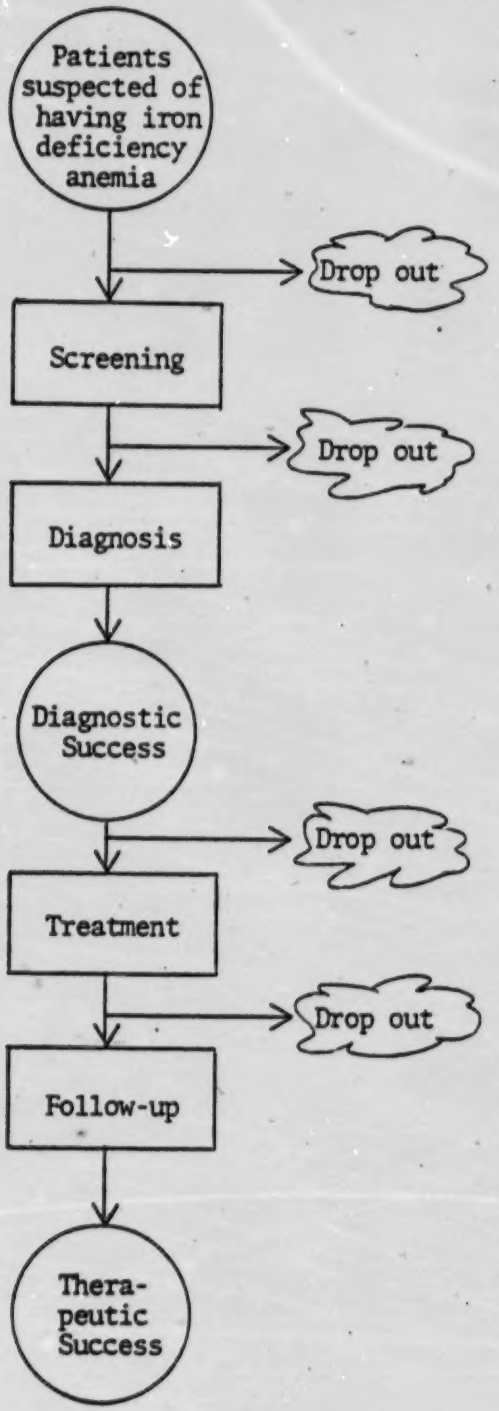


FIGURE 1.

Process Map for
Iron Deficiency Anemia: Original Version

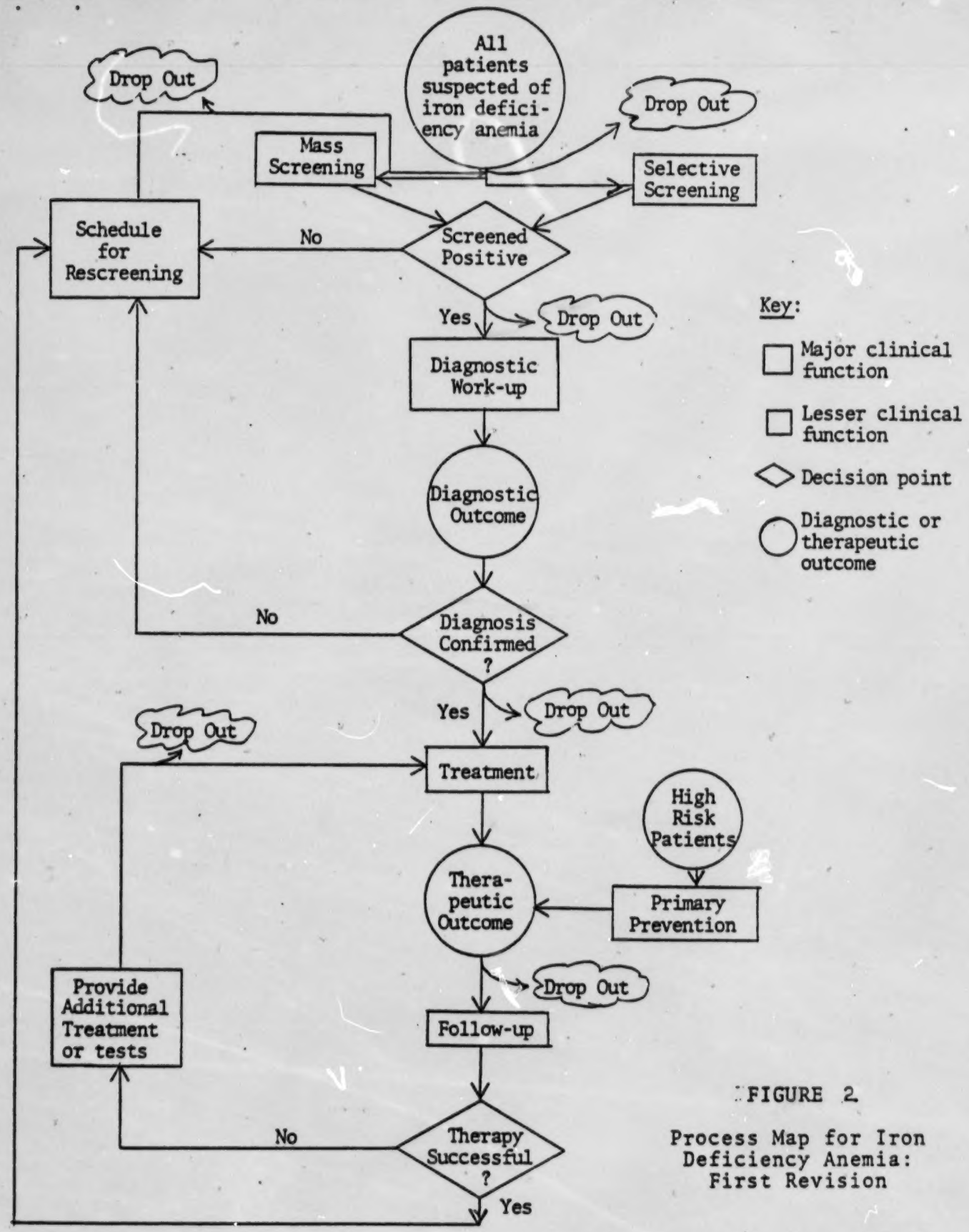


FIGURE 2.

Process Map for Iron Deficiency Anemia: First Revision

	Prevention	Well-Patient Surveillance	Screening	Diagnostic Evaluation	Treatment	Follow-up
Prenatal Care	X	X	X			X
Infant Care	X	X	X			
Streptococcal Disease			X	X	X	
Lacerations of Scalp and Extremeties			X	X	X	X
Hypertension			X	X		
Urinary Tract Infection				X	X	X
Iron-Deficiency Anemia			X	X	X	X

TABLE 1: Tracer Conditions Used in Pilot Study, Shown in Relation to the Clinical Functions of Health Care.

DESIGN PHASE

Quality Assurance Director	10 Man-Days
Physician Consultants	5 Man-Days
Local Physician (review of criteria & indicators)	½ Man-Day (each)

IMPLEMENTATION

Physician (training data collector(s))	2 Man-Days
Data Collectors (data collection)	10 Man-Days
Data Collectors (data analysis)	4 Man-Days
Quality Assurance Director (interpreting results)	2 Man-Days
Quality Assurance Director (other)	2 Man-Days

TABLE 2: Estimates of Cost of Implementing Ambulatory Care Quality Assurance Methodology in a given site.

APPENDIX A

PROCESS MAPS

FIGURE 2: STREPTOCOCCAL DISEASE AUDIT ALGORITHM

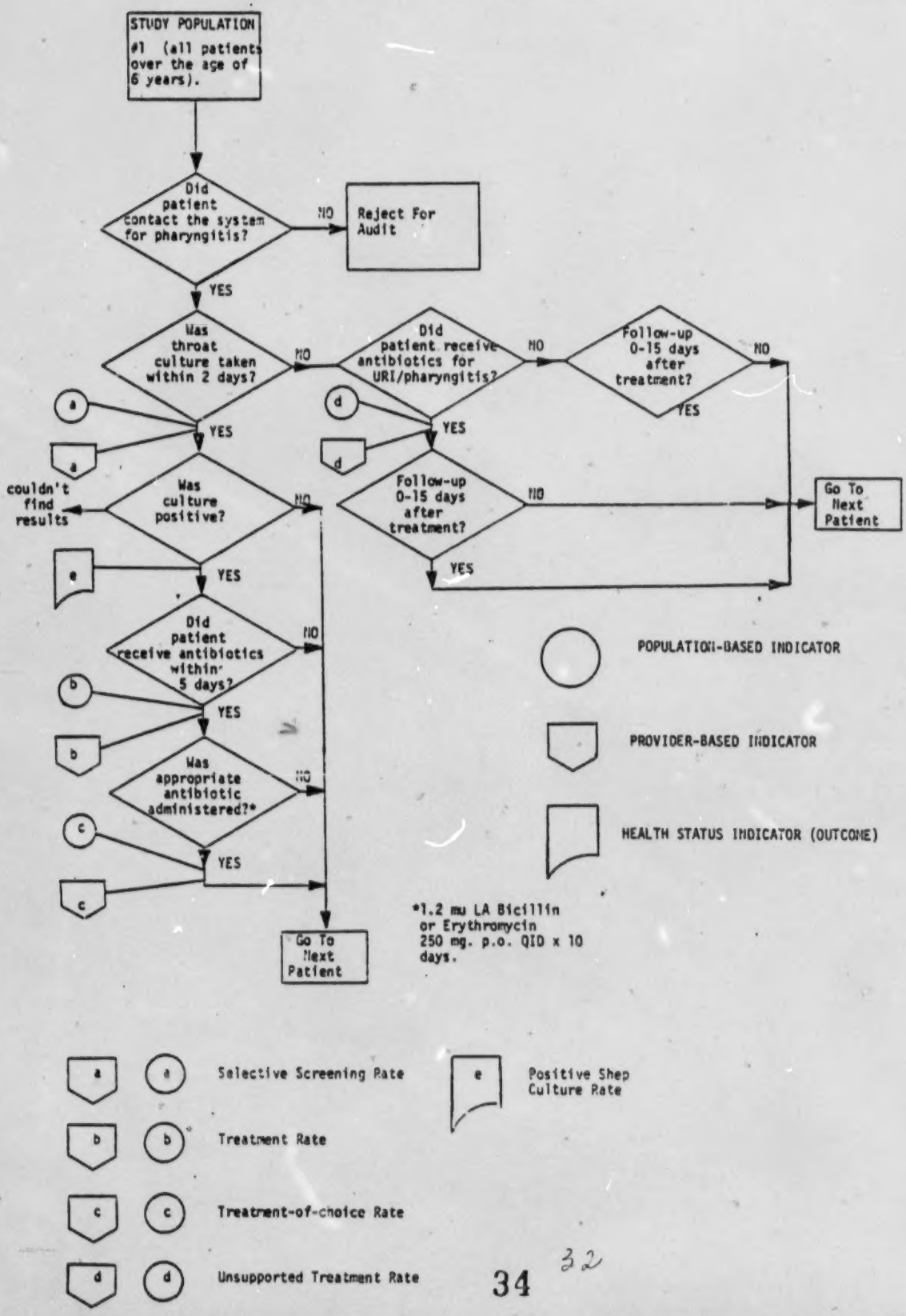
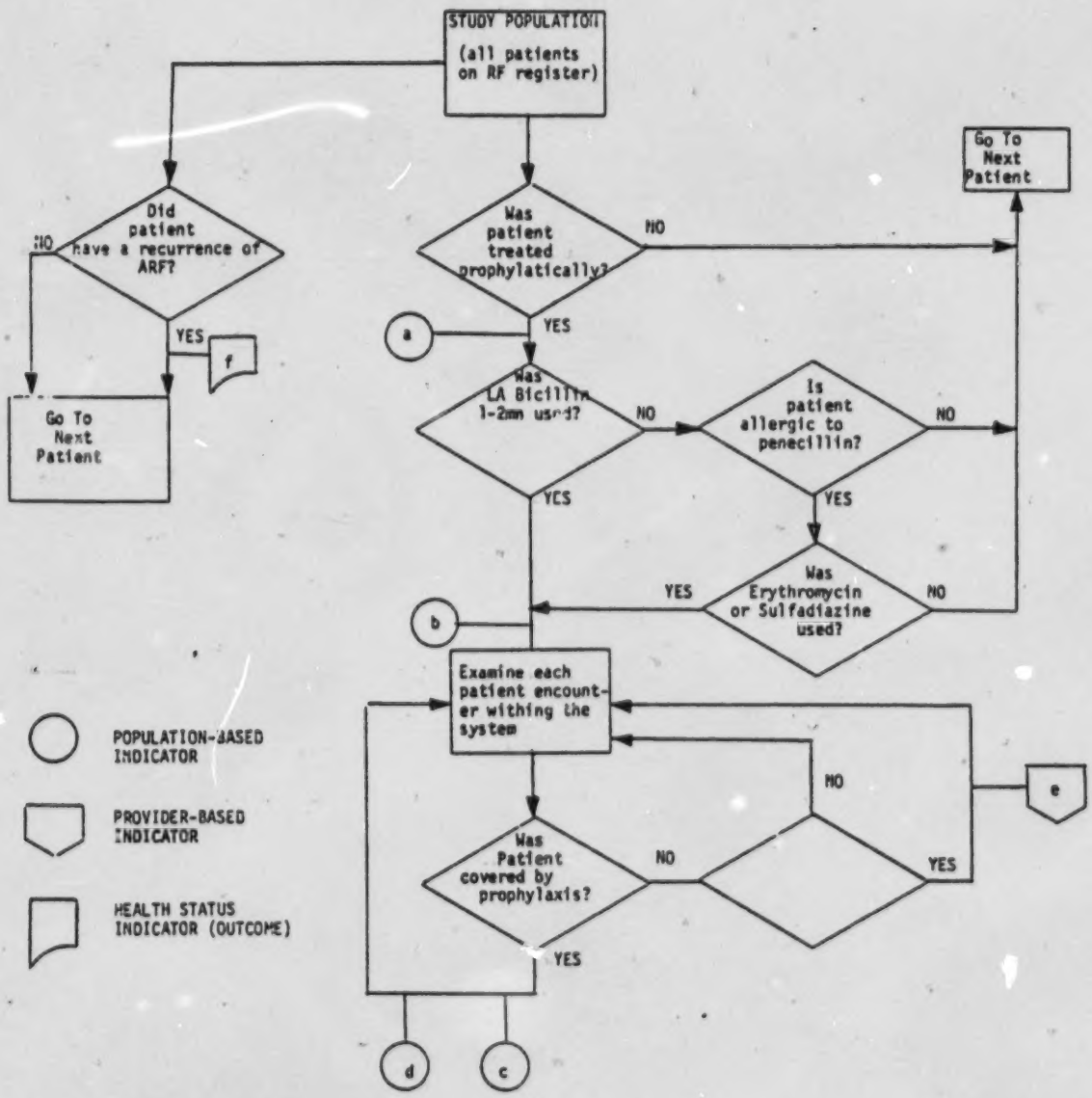


FIGURE 3: RHEUMATIC FEVER PROPHYLAXIS AUDIT ALGORITHM



a Prophylaxis Rate

b Drug-of-choice Rate

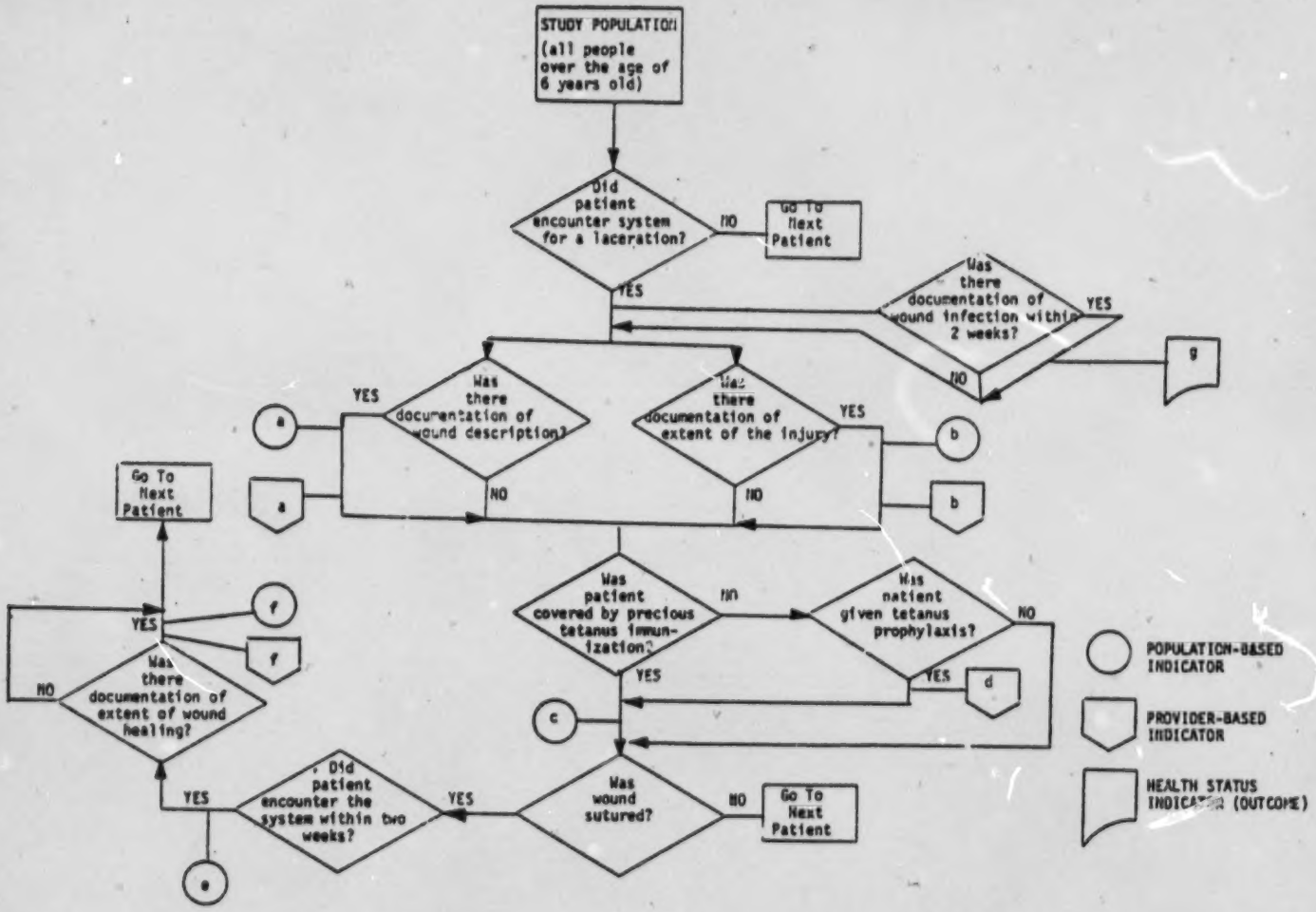
c Cohort Prophylaxis Coverage Rate

d Prophylaxis Coverage Rate

e Prophylaxis Renewal Rate

f Acute Rheumatic Fever Recurrence Rate

FIGURE 4: LACERATIONS AUDIT ALGORITHM



a — Wound Description Rate

b — Documentation of Extent of Injury Rate

c — Tetanus Prophylaxis Coverage Rate

d — Tetanus Prophylaxis Renewal Rate

e — Revisit Rate

f — Follow-up Rate

g — Observed Wound Infection Rate

FIGURE 5: PRENATAL CARE AUDIT ALGORITHM

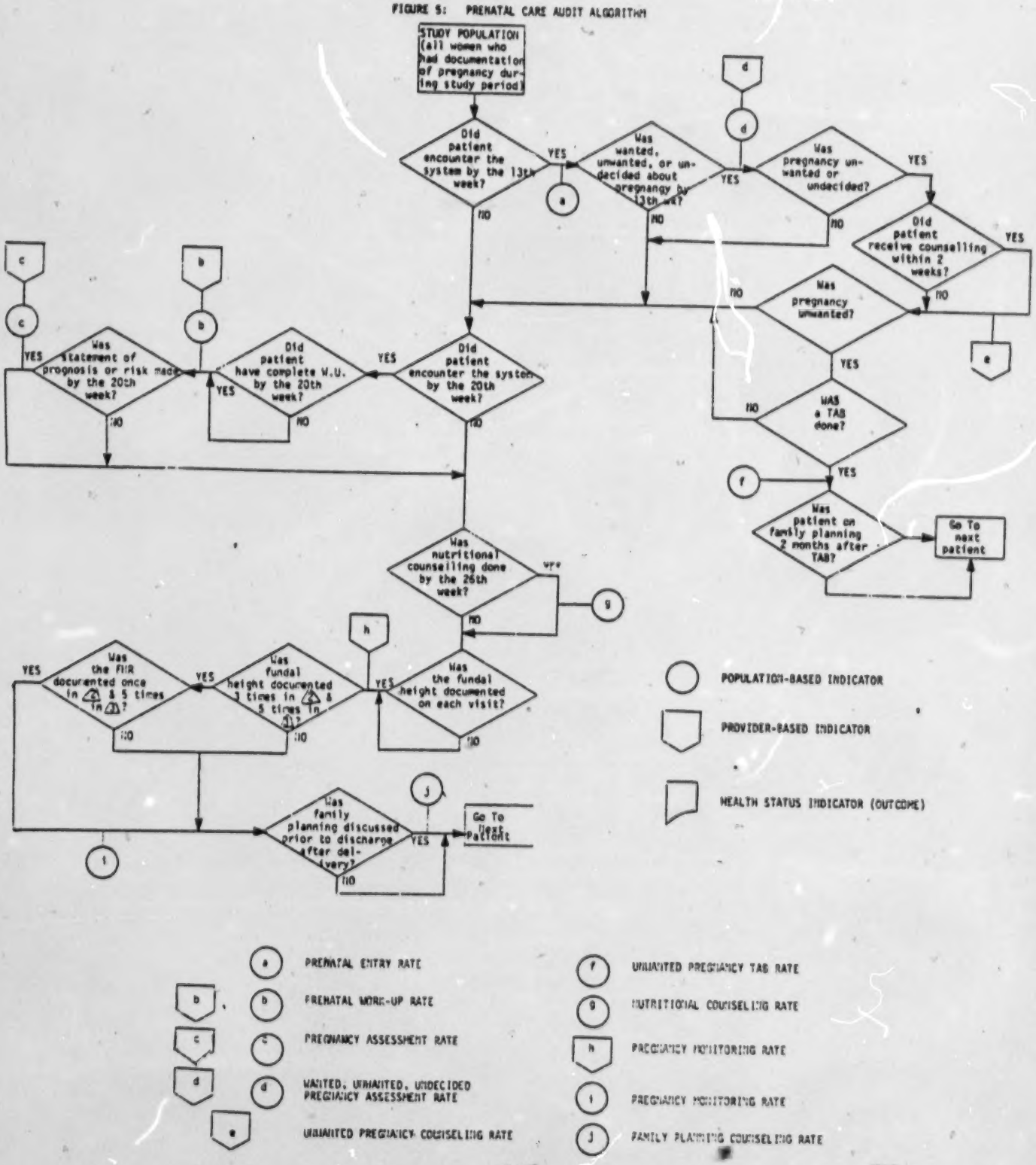
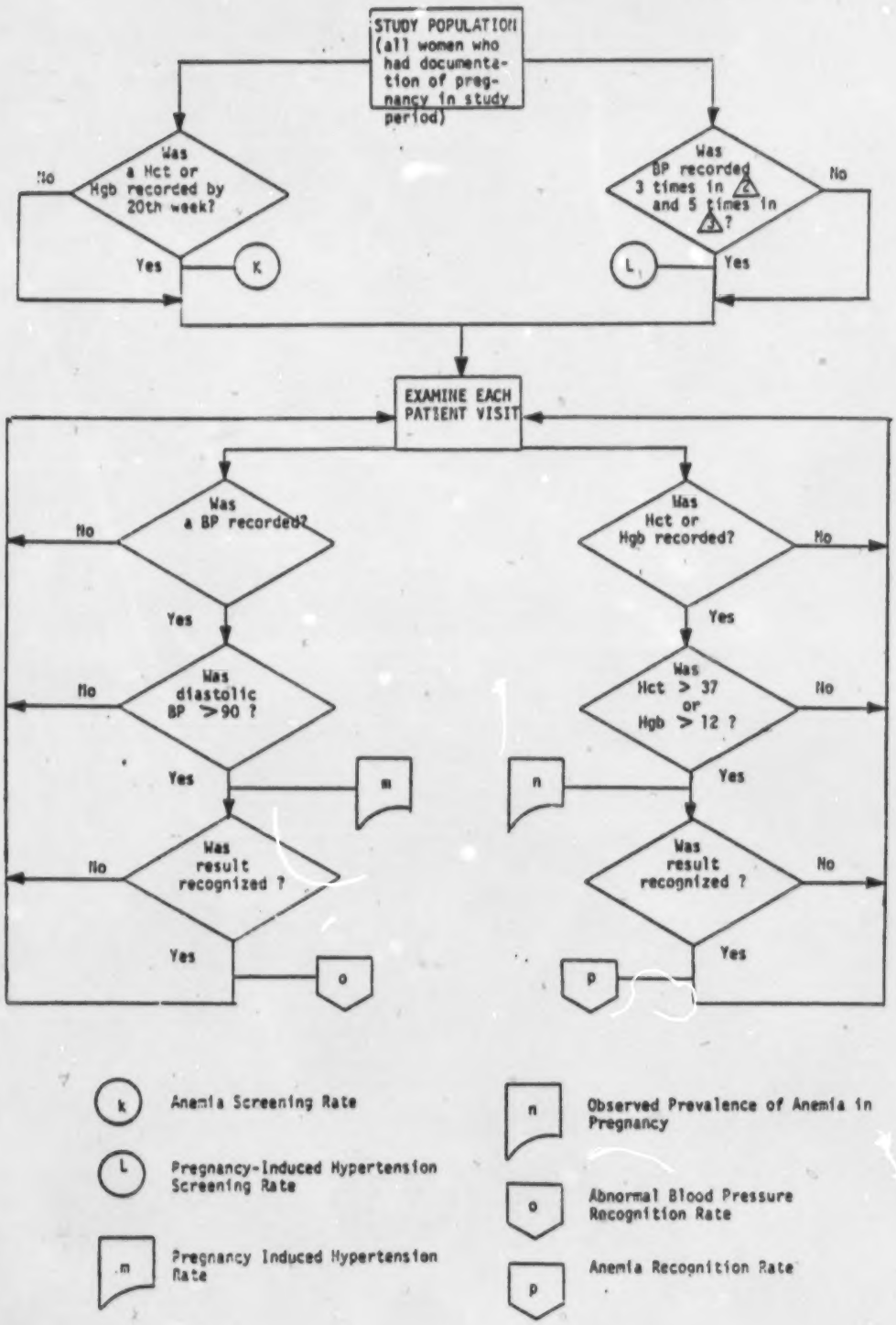


FIGURE 6: PRENATAL CARE AUDIT ALGORITHM (CON'T)



k — Anemia Screening Rate

L — Pregnancy-Induced Hypertension Screening Rate

m — Pregnancy Induced Hypertension Rate

n — Observed Prevalence of Anemia in Pregnancy

o — Abnormal Blood Pressure Recognition Rate

p — Anemia Recognition Rate

FIG 7: HYPERTENSION SCREENING AUDIT ALGORITHM

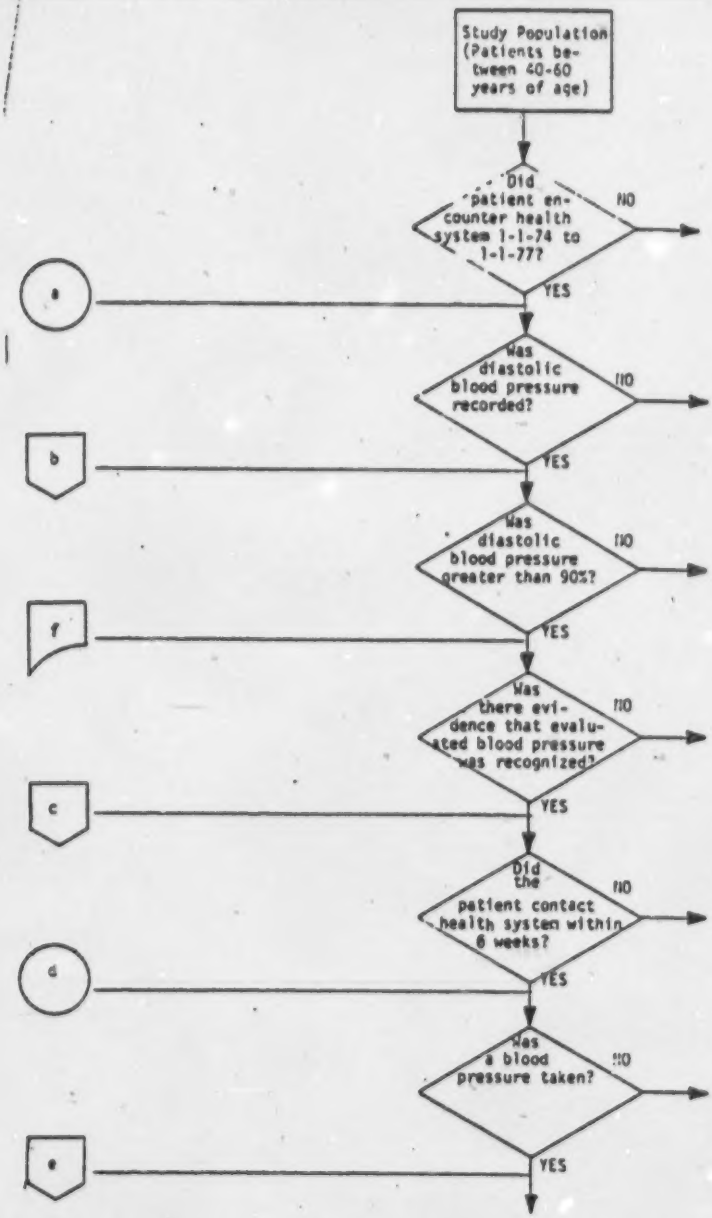


FIG 8: IRON-DEFICIENCY ANEMIA AUDIT ALGORITHM

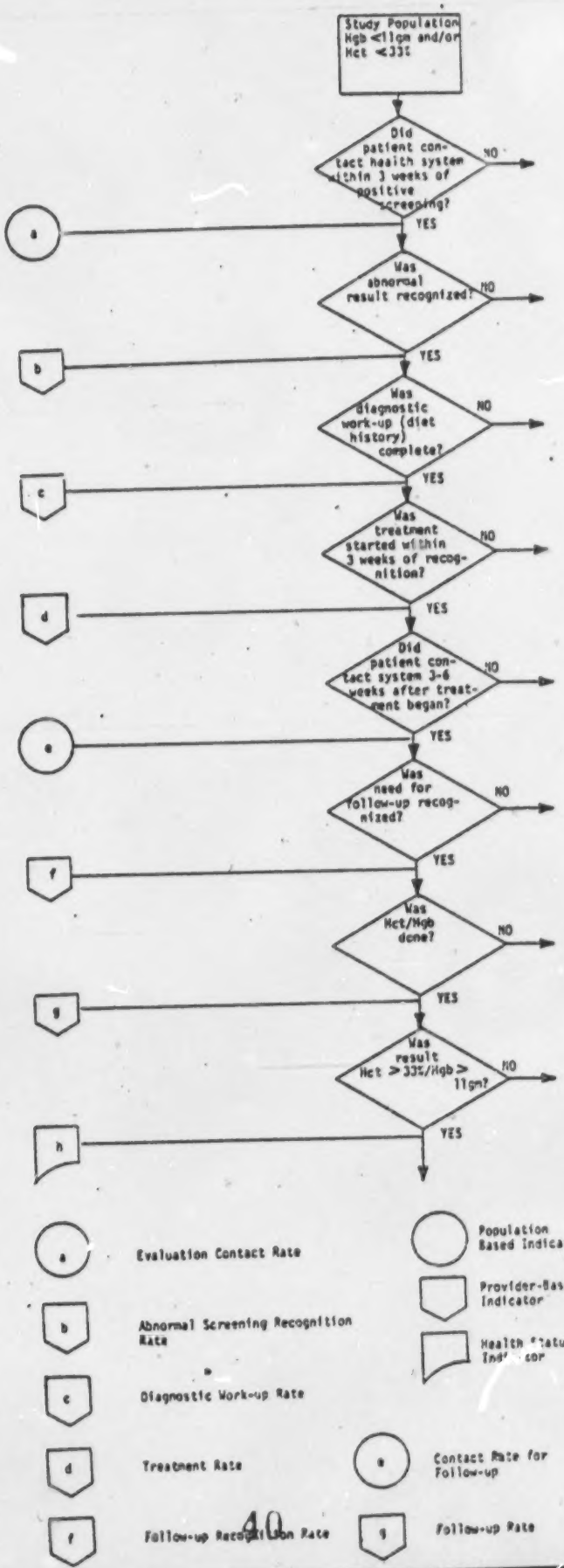
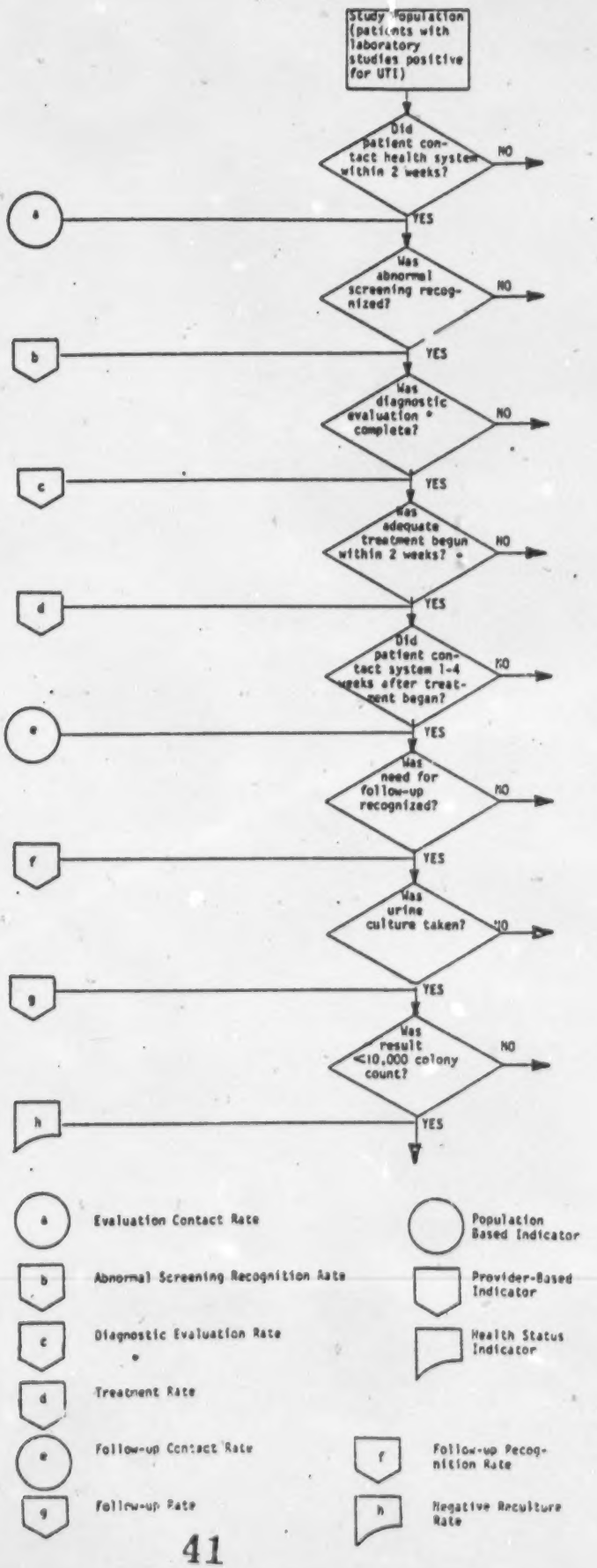


FIG 9: URINARY TRACT INFECTION
AUDIT ALGORITHM



APPENDIX B

INDICATORS AND AUDIT CRITERIA

TABLE 3: STREPTOCOCCAL DISEASE
POPULATION BASED PROCESS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION NARRATIVE
Selective Screening Rate	What percent of first visits for pharyngitis received a throat culture within two days of the initial visit?	All patients over the age of 6 years who contacted a health provider for pharyngitis.	Number of first visits for pharyngitis in which strep culture was obtained divided by total number of visits.
Treatment Rate	What percent of patients with a positive strep culture received an antibiotic within 5 days of the culture data?	All patients over the age of 6 years who contacted a health provider for pharyngitis.	Number of patients with positive strep culture results who received any antibiotic treatment within 5 days of the culture result divided by the number of patients with a positive strep culture result.
Treatment-of-Choice Rate	What percent of patients with a positive strep culture received either 1.2 mu LA Bicillin (600,000 mu for children less than 60 lbs or 9 yrs or less), Oral pen x 10 days Erythromycin x 10 days within 5 days of the culture data?	All patients over the age of 6 years who contacted a health provider for pharyngitis.	Number of patients receiving LA Bicillin Oral Penicillin or Erythromycin within 5 days divided by the number of patients with a positive strep culture.
Unsupported Treatment Rate	What percent of patients with an episode of pharyngitis received an antibiotic without receiving a strep culture?	All patients over the age of 6 years who contacted a health provider for pharyngitis.	Number of pharyngitis patients who received an antibiotic divided by the number of patients who did not receive a strep throat culture.

TABLE 4: STREPTOCOCCAL DISEASE
PROVIDER BASED PROCESS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION NARRATIVE
Selective Screening Rate	What percent of first visits for pharyngitis received a throat culture within two days of the initial visit?	All patients over the age of 6 years.	Number of first episodes of pharyngitis in which strep culture was obtained divided by total number of episodes.
Treatment Rate	What percent of patients with a positive strep culture received an antibiotic within 5 days of the culture date?	All patients over the age of 6 years.	Number of patients with positive strep culture results who received any antibiotic treatment within 5 days of the culture result divided by the number of patients with a positive strep culture.
Treatment-of-Choice Rate	What percent of patients with a positive strep culture received either 1.2 mu LA Bicillin (600,000 mu for children less than 60 lbs or 9 yrs or less), Oral pen x 10 days Erythromycin x 10 days within 5 days of the culture data?	All patients over the age of 6 years.	Number of patients receiving LA Bicillin, Oral Penicillin or Erythromycin within 5 days divided by the number of patients with a positive strep culture.
Unsupported Treatment Rate	What percent of patients with an episode of pharyngitis received an antibiotic without receiving a strep culture?	All patients over the age of 6 years.	Number of patients who received an antibiotic divided by the number of patients who did not receive a strep throat culture.

TABLE 5: STREPTOCOCCAL DISEASE
HEALTH STATUS (OUTCOME) INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION NARRATIVE
Positive Strep Culture Rate	What percent of episodes of pharyngitis which were cultured resulted in a positive strep culture?	All patients over the age of 6 years who received a throat culture for pharyngitis.	Number of positive strep cultures divided by number of episodes of pharyngitis in which a culture was obtained.

TABLE 6: RHEUMATIC FEVER PROPHYLAXIS
POPULATION BASED PROCESS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION NARRATIVE
Prophylaxis Rate	What proportion of patients were treated prophylactically during the study period?	All patients on rheumatic fever registry for whom registry called for prophylactic treatment.	Number of patients receiving at least one prophylactic dose divided by the total study cohort.
Drug of Choice Rate	What proportion of patients received LA Bicillin or (if allergic to penicillin) either Erythromycin 250 mg QID or Sulfadiazine 1 gram g.d.?	All patients on rheumatic fever registry for whom registry called for prophylactic treatment.	Number of patients receiving LA Bicillin, Erythromycin or Sulfadiazine divided by the total study cohort.
Cohort Prophylaxis Coverage Rate	What is the mean percent of the study year during which the study cohort was covered prophylactically?	All patients on rheumatic fever registry for whom registry called for prophylactic treatment.	Number of weeks each patient was covered with prophylaxis divided by the study cohort times 52 weeks.
Prophylaxis Coverage Rate	What is the mean percent of the study year during which those individuals receiving prophylaxis were covered prophylactically?	All patients on rheumatic fever registry for whom registry called for prophylactic treatment.	Number of weeks each patient was covered with prophylaxis divided by the number of patients receiving prophylaxis times 52 weeks.
Acute Rheumatic Fever Recurrence Rate	What percent of patients suffered a recurrence of ARF during the study time frame (1 year)?	All patients on rheumatic fever registry for whom registry called for prophylactic treatment.	Number of patients with an episode of acute rheumatic fever during the study year divided by the study cohort.
Prophylaxis Renewal Rate	What percent of visits by post ARF patients not covered prophylactically resulted in a renewal of prophylaxis?	All patients on rheumatic fever registry for whom registry called for prophylactic treatment.	Number of patient visits resulting in a renewal of prophylaxis divided by the number of patient visits not covered by prophylaxis.

TABLE 7: RHEUMATIC FEVER PROPHYLAXIS
PROVIDER-BASED PROCESS INDICATOR

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION NARRATIVE
Prophylaxis Renewal Rate	What percent of visits by post ARF patients not covered prophylactically resulted in a renewal of prophylaxis?	Patients on rheumatic fever registry for whom registry called for prophylactic treatment.	Number of patient visits resulting in a renewal of prophylaxis divided by the number of patient visits not covered by prophylaxis.

TABLE 8: RHEUMATIC FEVER PROPHYLAXIS
POPULATION-BASED HEALTH STATUS INDICATOR

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION NARRATIVE
Acute Rheumatic Fever Recurrence Rate	What percent of patients suffered a recurrence of ARF during the study time frame (1 year)?	Patients on rheumatic fever registry for whom registry called for prophylactic treatment.	Number of patients with an episode of acute rheumatic fever during the study year divided by the study cohort.

TABLE 9: LACERATIONS OF SCALP AND EXTREMITIES
POPULATION-BASED PROCESS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION NARRATIVE
Wound Description Rate	Percent of scalp or extremity laceration encounters documented: 1) The time since the laceration, 2) Cause of the laceration, and 3) Description of the wound.	All patients over the age of 6 years who contacted a health provider for a scalp or extremity laceration.	Number of encounters documenting the time, cause and description of wound divided by the total number of encounters for scalp and extremity lacerations.
Documentation of Extent of Injury Rate	Percent of scalp or extremity lacerations with documented consideration of bone, nerve and vascular involvement.	All patients over the age of 6 years who contacted a health provider for a scalp or extremity laceration.	Number of encounters documenting if the wound was superficial plus, if not superficial, the number of cases documenting sensory, vascular or motor function distal to the laceration plus the number of scalp wounds where a skull fracture was considered. The above divided by the total number of encounters for scalp and extremity lacerations.
Tetanus Prophylaxis Coverage Rate	Percent of scalp or extremity lacerations which had current tetanus immunization or where given tetanus protection.	All patients over the age of 6 years who contacted a health provider for a scalp or extremity laceration.	Number of encounters with current tetanus immunization or number of encounters given a tetanus toxoid divided by the total number of scalp and extremity laceration encounters.
Revisit Rate	Percent of patients with sutured scalp or extremity laceration by any health provider for any reason within 5-15 days of laceration encountar.	All patients over the age of 6 years who contacted a health provider for a scalp or extremity laceration.	Number of patients seen for any reason 5-15 days after laceration encounter divided by the total number of sutured scalp and extremity lacerations.
Follow-up Rate	Percent of patients with sutured scalp or extremity lacerations with documentation of wound healing 5-15 days after laceration encountar.	All patients over the age of 6 years who contacted a health provider for a scalp or extremity laceration.	Number of patients with documentation of wound healing divided by the number of patients with sutured lacerations.

TABLE 10: LACERATIONS OF SCALP AND EXTREMITIES
PROVIDER-BASED PROCESS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION NARRATIVE
Wound Description Rate	Percent of scalp or extremity laceration encounters by provider type (MD, PHN, CHA, RN, PA) that documented: 1) Time since laceration, 2) Cause of laceration, and 3) Descript.on of wound.	All patients over the age of 6 years who contacted a health provider for a scalp or extremity laceration.	By provider type number of encounters documenting the time, cause and description of wound divided by the total number of encounters for scalp and extremity lacerations.
Documentation of Extent of Injury Rate	By provider type percent of scalp or extremity lacerations with documented consideration of bone, nerve and vascular involvement.	All patients over the age of 6 years who contacted a health provider for a scalp or extremity laceration.	By provider type number of encounters documenting if the wound was superficial plus, if not superficial, the number of cases documenting sensory, vascular or motor function distal to the laceration plus the number of scalp wounds where a skull fracture was considered. The above divided by the total number of encounters for scalp and extremity lacerations.
Tetanus Prophylaxis Renewal Rate	Percent of patients who were due for tetanus immunization and received tetanus toxoid.	All patients over the age of 6 years who contacted a health provider for a scalp or extremity laceration.	Number of patients who received .5 cc adsorbed tetanus toxoid divided by the number of patients who did not have a tetanus boostar within 5 years.
Follow-up Rate	By provider type, percent of patients with sutured scalp or extremity lacerations who revisited provider 5-15 days after laceration with documentation of wound healing.	All patients over the age of 6 years who contacted a health provider for a scalp or extremity laceration.	Number of patients who revisited a health provider and had a statement of wound healing divided by the total number of patients in the cohort.
HEALTH STATUS INDICATOR			
Observed Wound Infection Rate	Percent of scalp or extremity laceration encounters with documentation of wound infection within 2 weeks.	All patients over the age of 6 years who contacted a health provider for a scalp or extremity laceration.	Number of patients with evidence of wound infection within 2 weeks of laceration encounter divided by total number of encounters for scalp and extremity lacerations.

TABLE 11: PRENATAL CARE
POPULATION BASED PROCESS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION
Prenatal Entry Rate	What proportion of pregnant women entered the health care system by the 20th week of gestation?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who made a prenatal visit at 20 week gestation or less divided by the total number of women who made a prenatal visit during the study period.
Prenatal Work-Up Rate	What proportion of pregnant women had a VDRL, cervical culture, pap smear, evaluation of rubella status and clinical pelvimetry by the 20th week of gestation?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who had a VDRL, cervical culture, pap smear, evaluation of rubella status and clinical pelvimetry by the 20th week of gestation divided by the total number of women who made a prenatal visit during the study period.
Pregnancy Assessment Rate	What proportion of pregnant women had documentation of risk or prognosis of pregnancy by the 20th week of gestation?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who had a statement of risk or prognosis of pregnancy by the 20th week of gestation divided by the total number of women who made a prenatal visit during the study period.
Wanted, Unwanted, Undecided, Pregnancy Assessment Rate	What proportion of pregnant women had documentation of wanted, unwanted, or undecided pregnancy by the 13th week of gestation?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women with statement of pregnancy wanted, unwanted, or undecided by the 13th week of gestation divided by the total number of women who had a prenatal visit during the study period.
Unwanted Pregnancy TAB Rate	What proportion of pregnant women with documentation of unwanted pregnancy prior to 13th week of gestation received a TAB?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who received a TAB divided by the total number of women with an unwanted pregnancy prior to the 13th week of gestation.
Nutritional Counseling Rate	What proportion of patients received nutritional counseling by the 26th week of gestation?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who received nutrition counseling by the 26th week of gestation divided by the total number of women who made a prenatal visit during the study period.
Family Planning Counseling Rate	What proportion of patients received family planning counseling during the pregnancy prior to discharge following delivery?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who received family planning counseling during pregnancy or prior to discharge following delivery divided by total number of women in study cohort.
Pregnancy Induced Hypertension Screening Rate	What proportion of patients had blood pressure checks at least 3 times in the second and 5 times in the third trimester?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who had blood pressure checks at least 3 times in 2nd and 5 times in 3rd trimester divided by total number of women in study cohort who were seen during their 2nd and 3rd trimesters.
Pregnancy Induced Hypertension Recognition Rate	What proportion of patients with a diastolic BP greater than 90 recorded during pregnancy had a diagnosis or narrative documenting recognition of the abnormal diastatic blood pressure?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of patients with a recorded diastolic blood pressure greater than 90 who had a diagnosis or narrative documenting recognition of the abnormal diastolic blood pressure divided by the number of patients with a diastolic blood pressure greater than 90.
Anemia Screening Rate	What proportion of patients had a hematocrit or hemoglobin checked in the first 20 weeks of gestation?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who had a Hgb or Hct during their first 20 weeks of gestation divided by the number of women in the study cohort.
Pregnancy Monitoring Rate	What proportion of pregnant women had the fundal height measured 3 times in the second and 5 times in the third trimester and had the FHR documented once in the second and 5 times in the third trimester?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who had their fundal height measured 3 times in the second and 5 times in the 3rd trimester and the FHR documented once in the 2nd and 5 times in the 3rd trimester divided by the study cohort seen in the 2nd and 3rd trimester.
Postpartum Follow-up Rate	What proportion of women who delivered were seen within 8 weeks of the delivery?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who were seen within 8 weeks of delivery divided by the number of women in the study cohort who delivered.

TABLE 12: PRENATAL CARE
PROVIDER BASED PROCESS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION
Prenatal Work-up Rate	What proportion of pregnant women had a VDRL, cervical culture, pap smear, and clinical pelvimetry within 2 weeks of the first prenatal visit?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who had a VDRL, cervical culture, pap smear, and clinical pelvimetry within 2 weeks of the first prenatal visit divided by the total number of women who made a prenatal visit during the study period.
Pregnancy Assessment Rate	What proportion of pregnant women had documentation of risk or prognosis of pregnancy within 2 weeks of the first prenatal visit?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who had a statement of risk or prognosis of pregnancy within 2 weeks of first prenatal visit divided by the total number of women who made a prenatal visit during the study period.
Wanted, Unwanted, Undecided Pregnancy Assessment Rate	What proportion of pregnant women had documentation of wanted, unwanted, or undecided pregnancy on the first prenatal visit?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women with a statement of pregnancy waated, unwanted or undecided divided by the total number of women who made a prenatal visit during the study period.
Unwanted Pregnancy Counseling Rate	What proportion of pregnant women with unwanted or undecided pregnancy documented on first visit received counseling within two weeks after first prenatal visit?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women with unwanted or undecided pregnancy who received an explanation of options within 2 weeks of first prenatal visit divided by the number of women with a statement of unwanted or undecided pregnancy on first prenatal visit.
Anemia Screening Rate	What proportion of pregnant women had a hematocrit or hemoglobin checked within 2 weeks of the first prenatal visit?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of women with an Hgb or Hct within 2 weeks of first prenatal visit divided by the total number of women who made a prenatal visit during the study period.
Pregnancy Monitoring Rate	What proportion of visits made after the prenatal evaluation resulted in documentation of fundal height?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of visits made after the prenatal evaluation with documented fundal height divided by the number of visits made by the study cohort.
Pregnancy Induced Hypertension Screening Rate	What proportion of visits made by pregnant women in the second and third trimester resulted in a documented blood pressure recording?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of visits in 2nd and 3rd trimesters with recorded blood pressure divided by the total number of visits in the 2nd and 3rd trimesters by the study population.
Abnormal BP Recognition Rate	What proportion of visits with a recorded diastolic BP greater than 90 had a recorded diagnosis or narrative documenting recognition of the abnormal BP?	Women with a diagnosis of pregnancy between Oct. 1, 1974 and Oct. 1, 1975.	Number of visits with a recorded diastolic BP greater than 90 with a diagnosis or narrative documenting recognition of the abnormal diastolic blood pressure divided by the number of patients with diastolic BP greater than 90.

TABLE 13: PRENATAL CARE
POPULATION BASED HEALTH STATUS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION
Normal Birth Weight Rate	Percent of pregnancies resulting in a birth weight between 5 lbs 8 oz and 9 lbs.	Newborns of women diagnosed as pregnant between Oct. 1, 1974 and Oct. 1, 1975.	Number of newborns with a birth weight between 5 lbs 8 oz and 9 lbs divided by the total number of newborns in the study population.
Acceptable 1 Minute Apgar Rate	Percent of pregnancies resulting in an infant with an Apgar 7 or greater.	Newborns of women diagnosed as pregnant between Oct. 1, 1974 and Oct. 1, 1975.	Number of newborns with a one minute Apgar score 7 or greater divided by the total number of newborns in the study population.
Pregnancy Induced Hypertension Rate	Percent of pregnancies with documentation of pregnancy induced hypertension or diastolic BP greater than 90 mm Hg.	Women diagnosed as pregnant between Oct. 1, 1974 and Oct. 1, 1975.	Number of women with pregnancy induced hypertension or diastolic BP greater than 90 divided by the total study population.
Gestational Diabetes Rate	Percent of pregnancies with documentation of gestational diabetes.	Women diagnosed as pregnant between Oct. 1, 1974 and Oct. 1, 1975.	Number of women with documented gestational diabetes divided by the total study population.
Minimum Estimate of Prevelance of Anemia in Pregnancy	Percent of pregnancies with documentation of anemia.	Women diagnosed as pregnant between Oct. 1, 1974 and Oct. 1, 1975.	Number of women with documented anemia divided by the total study population.
Operative Delivery Rate	Percent of pregnancies terminating with operative delivery.	Women diagnosed as pregnant between Oct. 1, 1974 and Oct. 1, 1975.	Number of pregnancies terminating with operative delivery divided by the total study population.
TAB Family Planning Rate	Percent of women with TAB who received family planning within 4-8 weeks after TAB.	Women diagnosed as pregnant between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who received family planning 4-8 weeks after TAB divided by the total number of TAB in the study population.
Post Partum Family Planning Rate	Percent of pregnant women who delivered who began family planning within 4-8 weeks of delivery.	Women diagnosed as pregnant between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who began family planning 4-8 weeks post partum divided by the total number of deliveries.
Remained Free Of Pregnancy For One Year Rate	Percent of women that remained free of pregnancy one year.	Women diagnosed as pregnant between Oct. 1, 1974 and Oct. 1, 1975.	Number of women who remained free of pregnancy one year after delivery divided by total number of women who delivered.

TABLE 14: INFANT CARE
POPULATION BASED PROCESS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION
Initial Feeding Instruction	What proportion of infants' mothers received diet or feeding instruction prior to discharge after delivery?	Women who delivered between July 1, 1975 and July 1, 1976.	Number of women who received nutrition feeding counseling prior to discharge after delivery divided by number of live deliveries in study population.
Initial Infant Care Counseling Rate	What proportion of infants' mothers received instructions on general topics of infant care prior to discharge after delivery?	Women who delivered between July 1, 1975 and July 1, 1976.	Number of women who received infant care counseling prior to discharge after delivery divided by the number of live deliveries in study population.
Growth Monitoring Rate	What proportion of infants had weight and length recorded at least 3 times in first 6 months and at least 2 times in second 7 months of life?	Births between Aug.1, 1974 and Aug. 1, 1975 (must be 13 mo. old between 9/1/75 and 9/1/76).	Number of infants with weight and length recorded 3 times in first 6 months and 2 times in second 7 months of life divided by the total number in the study population.
Development Monitoring Rate	What proportion of infants had documented statements of developmental milestones at least 4 times in the first 6 months and at least 3 times in the second 7 months of life?	Births between Aug. 1, 1974 and Aug. 1, 1975 (must be 13 mo. old between 9/1/75 and 9/1/76).	Number of infants with developmental history at least 4 times in the first 6 months and at least 3 times in second 7 months of life divided by the total number in the study population.
Diet Monitoring Rate	What proportion of infants had documentation of dietary intake at least 4 times in the first 6 months and at least 3 times in the second 7 months of life?	Births between Aug. 1, 1974 and Aug. 1, 1975 (must be 13 mo. old between 9/1/75 and 9/1/76).	Number of infants with diet history at least 4 times in the first 6 months and 3 times in the second 7 months of life divided by the total number in the study population.
Immunization Rate	What proportion of infants had received 3 DPT, 2 OPV, a measles and a rubella immunization by age 13 months?	Births between Aug. 1, 1974 and Aug. 1, 1975 (must be 13 mo. old between 9/1/75 and 9/1/76).	Number of infants who received 3 DPT, 2 OPV, a measles and rubella immunization by age 13 months divided by total number in study population.
Infant Care Counseling Rate	What proportion of infants' mothers received counseling in topics of infant care at least once in first six months and once in second 7 months of life?	Births between Aug. 1, 1974 and Aug. 1, 1975 (must be 13 mo. old between 9/1/75 and 9/1/76).	Number of mothers receiving infant care counseling once in first 6 months and once in second 7 months divided by total number in study population.
Anemia Screening Rate	What proportion of infants had a Hct/Hgb recorded in second 7 months of life?	Births between Aug. 1, 1974 and Aug. 1, 1976 (must be 13 mo. old between 9/1/75 and 9/1/76).	Number of infants with an Hct or Hgb recorded in the second 7 months of life divided by the total number of infants in the study population.
Anemia Screening Yield Rate	What proportion of infants screened for anemia were screened positive (Hgb less than 12 gm. or Hct less than 37%)?	Births between Aug. 1, 1974 and Aug. 1, 1975 (must be 13 mo. old between 9/1/75 and 9/1/76).	Number of infants with a Hct less than 37% or Hgb less than 12 gm. between 6 months and 13 months of life divided by the number of infants who received a Hct or Hgb between 6 and 13 months of life.
TB Screening Rate	What proportion of infants had a PPD or Tine test in the second 7 months of life?	Births between Aug. 1, 1974 and Aug. 1, 1975 (must be 13 mo. old between 9/1/75 and 9/1/76).	Number of infants with a PPD or Tine test recorded in the second 7 months of life divided by the total number of infants in the study population.
Hip Dysplasia Screening Rate	What proportion of infants had documentation of specific hip exam in their first 6 months of life?	Births between Aug. 1, 1974 and Aug. 1, 1975 (must be 13 mo. old between 9/1/75 and 9/1/76).	Number of infants with a hip exam in the first 6 months of life divided by the total number of infants in the study population.

47

Table 15: INFANT CARE
PROVIDER BASED PROCESS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION
Growth Monitoring Rate	What proportion of visits had weight and length recorded during first 13 months of life?	Births between 8/1/74 and 8/1/75.	Number of visits with recorded weight and length during first 13 months of life divided by the total number of visits made by the study population.
DPT Immunization Rate	What proportion of visits made when an infant was due for a DPT immunization was the immunization given?	Births between 8/1/74 and 8/1/75.	Number of visits made while overdue for DPT and received a DPT divided by total number of overdue visits.
Diet History Rate	What proportion of visits had documentation of recent dietary intake?	Births between 8/1/74 and 8/1/75.	Number of visits with documentation of diet history divided by total number of visits made by study population.

TABLE 16: INFANT CARE
POPULATION BASED HEALTH STATUS INDICATORS

TITLE	DESCRIPTION	STUDY POPULATION	COMPUTATION
Adequate Growth Rate	What proportion of infants were between the 10th and 90th percentiles for height and weight at approximately 1 year of age?	Births between 8/1/74 and 8/1/75.	Number of infants with height and weight between 10th and 90th percentiles at 1 year of age divided by number of infants in study sample with recorded weight and height at approximately 1 year of age.
Birth Depression Rate	What proportion of infants had an Apgar Score less than 6 at 1 minute or less than 8 at 5 minutes?	Births between 8/1/74 and 8/1/75.	Number of infants with an Apgar Score less than 6 at 1 minute or less than 8 at 5 minutes divided by the total number of infants in the study population.
Total Immunization Rate	What proportion of infants had received 3 DPT, 2 OPV, measles and a rubella immunization by age 13 months?	Births between 8/1/74 and 8/1/75.	Number of infants who received 3 DPT, 2 OPV, a measles and a rubella immunization by age 13 months divided by total number in study population.
DPT - OPV Immunization Rate	What proportion of infants received 3 DPT and 2 OPV by age 13 months?	Births between 8/1/74 and 8/1/75.	Number of infants who received 3 DPT and 2 OPV by age 13 months divided by the number of infants in the study cohort.
Minimum Estimate Prevalance of Anemia	What proportion of infants had documentation of a positive Hgb (less than 12 gm) or Hct (less than 37%) between 6 months and 13 months of age?	Births between 8/1/74 and 8/1/75.	Number of infants with a Hgb less than 12 gm or Hct greater than 37% between 6 months and 13 months of age divided by the number of infants in the study cohort.
Infant Nutrition and Feeding Instruction Rate	What proportion of infant mothers received infant nutrition and feeding instructions prior to discharge from the hospital?	Women who delivered between July 1, 1975 and July 1, 1976.	Number of infant mothers who received documentation of infant nutrition and feeding instruction prior to discharge from the hospital divided by the number of infants in the study cohort.
Breast Feeding Rate	What proportion of infant mothers were discharged from the hospital breast feeding?	Women who delivered between July 1, 1975 and July 1, 1976.	Number of infant mothers discharged from the hospital after delivery with documentation of breast feeding divided by the number of infant mothers.
Infant Care Counseling Rate	What proportion of infant mothers received infant care counseling prior to discharge from the hospital?	Women who delivered between July 1, 1975 and July 1, 1976.	Number of infant mothers who received documentation of infant care counseling prior to discharge after delivery divided by the number of infant mothers

48

TABLE 17: SYSTEM PERFORMANCE FOR HYPERTENSION SCREENING
(Population-Based Indicators)

INDICATOR	DESCRIPTION	STUDY POPULATION	COMPUTATION
Screening Contact Rate	Percent of population who made contact with the health care system at least once within the three year time frame (1/1/74-1/1/77).	All persons in the patient population between the ages of 40-60 years.	Number of persons who made contact with the helath system at least once during the time frame, divided by the total study population.
Screening Rate	Percent of patients making contact who had their blood pressure recorded at least once (in the absence of trauma, pregnancy, intoxication, or under the influence of medication known to elevate blood pressure).	All persons in the patient population between the ages of 40-60 years.	Number of persons who had at least one blood pressure recorded, divided by the number of persons contacting the health care system.
Abnormal Screening Recognition Rate	Percent of patients with a positive BP screen (diastolic BP >90 for whom there was any statement or action indicating recognition of the abnormal result on that visit.	All persons in the patient population between the ages of 40-60 years.	Number of patients for whom there was documentation of recognition, divided by the number of persons with an abnormal blood pressure.
Abnormal Screening	Percent of patients with abnormal screening BP who made contact with the system within 6 weeks of the abnormal BP.	All persons in the patient population between the ages of 40-60 years.	Number of patients making contact with the health care system within 6 weeks, divided by the number of persons with an abnormal BP.
Rescreening Rate	Percent of patients making contact ho had a blood pressure recorded within 6 weeks of the original abnormal result.	All persons in the patient population between the ages of 40-60 years.	Number of patients with an additional blood pressure recorded within 6 weeks, divided by the number of persons who re-contacted the health care system.
Screening Yield	Percent of patients screened during the time frame, who had one or more diastolic blood pressure readings above 90mm Hg.	All persons in the patient population between the ages of 40-60 years.	Number of persons with on or more abnormal blood pressures, divided by the number of persons who were screened during the time frame.

TABLE 18: SYSTEM PERFORMANCE FOR IRON DEFICIENCY ANEMIA (Population-Based Indicators)

INDICATOR	DESCRIPTION	STUDY POPULATION	COMPUTATION
Contact for Screening Rate	Percent of infants and prenatal patients who made contact with the health care system when they required screening for anemia. (Percent of infants contacting the system between age 6-13 mos. Percent of prenatal patients contacting the system by 20th week of gestation.)	Women with diagnosis of pregnancy between 10/1/74-10/1/75. Infants born between 8/1/74 and 8/1/75.	Number of persons who contacted the health care system during the time frame for screening, divided by the total study sample.
Screening Rate	Percent of infants and prenatals making contact for screening, who had a hematocrit and/or hemoglobin.	Women with diagnosis of pregnancy between 10/1/74-10/1/75. Infants born between 8/1/74 and 8/1/75.	Number of persons who were screened, divided by the number of persons who made contact with the system during the time they were due for screening.
Evaluation Contact Rate	Percent of patients screened positive for anemia (Hct <33 and/or Hgb <11) who made contact with the system within 3 weeks after positive screening.	Patients with a Hct <33 or Hgb <11 between 1/1/76 & 1/1/77 who do not have neoplastic disease, acute or chronic blood loss, or an anemia previously diagnosed as other than iron deficiency.	Number of patients who made contact with the system within 3 weeks after the positive screening result, divided by the number of persons with a positive screening result.
Abnormal Screening Recognition Rate	Percent of patients making contact for whom there is any statement or action indicating recognition of the abnormal result.	Patients with a Hct <33 or Hgb <11 between 1/1/76 & 1/1/77 who do not have neoplastic disease, acute or chronic blood loss, or an anemia previously diagnosed as other than iron deficiency.	Number of patients for whom there is evidence of recognition, divided by the number of patients contacting the health care system.
Diagnostic Work-Up Rate	Percent of patients with recognition of abnormal result, for whom any statement of dietary intake was documented.	Patients with a Hct <33 or Hgb <11 between 1/1/76 & 1/1/77 who do not have neoplastic disease, acute or chronic blood loss, or an anemia previously diagnosed as other than iron deficiency.	Number of patients with documentation of dietary intake, divided by the number of patients contacting the health care system.

TABLE 10: (Continued)

INDICATOR	DESCRIPTION	STUDY POPULATION	COMPUTATION
Treatment Rate	Percent of patients with recognition of abnormal result, who were started on iron therapy within 1 week of diagnosis.	Patients with a Hct <33 or Hgb <11 between 1/1/76 & 1/1/77 who do not have neoplastic disease, acute or chronic blood loss, or an anemia previously diagnosed as other than iron deficiency.	Number of patients started on iron therapy, divided by number of patients with documentation of recognition of abnormal result.
Contact Rate for Follow-Up	Percent of patients begun on therapy who made contact with the health care system within 3-6 weeks after iron therapy was instituted.	Patients with a Hct <33 or Hgb <11 between 1/1/76 & 1/1/77 who do not have neoplastic disease, acute or chronic blood loss, or an anemia previously diagnosed as other than iron deficiency.	Number of patients on therapy who contacted system, divided by number of patients who began iron therapy.
Follow-Up Recognition Rate	Percent of patients contacting the system 3-6 weeks after therapy started, for whom there was any statement or action indicating the need for follow-up.	Patients with a Hct <33 or Hgb <11 between 1/1/76 & 1/1/77 who do not have neoplastic disease, acute or chronic blood loss, or an anemia previously diagnosed as other than iron deficiency.	Number of patients with evidence of recognition of need for follow-up, divided by number of patients who contacted the system 3-6 weeks after therapy started.
Follow-Up Rate	Percent of patients with recognition of the need for follow-up who received a hemoglobin and/or hematocrit within 3-6 weeks after institution of iron therapy.	Patients with a Hct <33 or Hgb <11 between 1/1/76 & 1/1/77 who do not have neoplastic disease, acute or chronic blood loss, or an anemia previously diagnosed as other than iron deficiency.	Number of patients who had a follow-up Hct or Hgb, divided by the number of patients with recognition of the need for follow-up.
Screening Yield	Percent of infants and prenatal patients screened for anemia who had a Hgb <11 and/or Hct <33.	Women with diagnosis of pregnancy between 10/1/74-10/1/75. Infants born between 8/1/74 and 8/1/75.	Number of infants and prenatal patients with a Hgb <11 and/or Hct <33, divided by number of patients screened.

TABLE 18: (Continued)

INDICATOR	DESCRIPTION	STUDY POPULATION	COMPUTATION
Resolution of Anemia Documentation Rate	Percent of patients with a repeat Hct and/or Hgb 3-6 weeks after therapy started, which resulted in a Hct >33 and/or Hgb >11.	Women with diagnosis of pregnancy between 10/1/74-10/1/75. Infants born between 8/1/74 and 8/1/75.	Number of patients with a repeat Hct >33 and/or Hgb >11, divided by the number of patients with a repeat Hct or Hgb.

TABLE 19: SYSTEM PERFORMANCE FOR URINARY TRACT INFECTIONS (Population-Based Indicators)

INDICATOR	DESCRIPTION	STUDY POPULATION	COMPUTATION
Evaluation Contact Rate	Percent of patients with a positive urine culture (>100,000 organisms) who made contact with the health care system within 2 weeks of positive culture.	Patients with a urine culture >100,000 organisms between 1/1/76 and 1/1/77. Excludes patients with chronic or recurrent UTI or known abnormal anatomy of urinary tract.	Number of patients with positive urine culture who made contact with the system, divided by the total study cohort.
Abnormal Screening Recognition Rate	Percent of patients making contact within 2 weeks, who had any statement or action indicating that positive culture was recognized.	Patients with a urine culture >100,000 organisms between 1/1/76 and 1/1/77. Excludes patients with chronic or recurrent UTI or known abnormal anatomy or urinary tract.	Number of patients with recognition of abnormal result, divided by the number of patients who contacted the system.
Diagnostic Evaluation Rate	Percent of patients with recognition of positive culture, who had documentation of the history, description of symptoms, temperature, and palpation of the abdomen.	Patients with a urine culture >100,000 organisms between 1/1/76 and 1/1/77. Excludes patients with chronic or recurrent UTI or known abnormal anatomy or urinary tract.	Number of patients receiving diagnostic work-up, divided by the number of patients with recognition of the need for a work-up.
Treatment Rate	Percent of patients with recognition of positive culture, who were placed on an appropriate antibiotic therapy within 2 weeks of positive culture. (Soluble sulfonamide, ampicillin, tetrachine, or nitrofurantion)	Patients with a urine culture >100,000 organisms between 1/1/76 and 1/1/77. Excludes patients with chronic or recurrent UTI or known abnormal anatomy or urinary tract.	Number of patients placed on antibiotic therapy, divided by the number of patients with recognition of the abnormal result.
Follow-Up Contact Rate	Percent of patients treated who made contact with the health care system within 1-4 weeks after the treatment was started.	Patients with a urine culture >100,000 organisms between 1/1/76 and 1/1/77. Excludes patients with chronic or recurrent UTI or known abnormal anatomy or urinary tract.	Number of patients who recontacted the system, divided by the number of patients who were started on therapy.

TABLE 19: (Continued)

INDICATOR	DESCRIPTION	STUDY POPULATION	COMPUTATION
Follow-Up Recognition Rate	Percent of patients making contact for whom there was any statement of action indicating recognition of the need for follow-up.	Patients with a urine culture >100,000 organisms between 1/1/76 and 1/1/77. Excludes patients with chronic or recurrent UTI or known abnormal anatomy or urinary tract.	Number of patients with documentation of recognition of the need for follow-up, divided by the number of patients who made contact with the system.
Follow-Up Rate	Percent of patients with recognition of the need for follow-up who received a urine culture within 1-4 weeks after treatment started.	Patients with a urine culture >100,000 organisms between 1/1/76 and 1/1/77. Excludes patients with chronic or recurrent UTI or known abnormal anatomy or urinary tract.	Number of patients who had a repeat urine culture, divided by the number of patients with recognition of the need for follow-up.
Negative Reculture Rate	Percent of patients treated and followed-up who had a repeat urine culture resulting in <100,000 organisms.	Patients with a urine culture >100,000 organisms between 1/1/76 and 1/1/77. Excludes patients with chronic or recurrent UTI or known abnormal anatomy or urinary tract.	Number of patients with a normal repeat culture, divided by the number of patients who had a repeat culture.

APPENDIX C

DATA COLLECTION INSTRUMENTS

RECORD NUMBERS

Sells 1-
SR 3-
Pisinimo 4-
IID 6-
(cc 1-7)

PATIENT'S NAME _____ (Last) (First)

BIRTH DATE (cc 45-50) MO. DAY YR.

COMM. OF RESIDENCE _____ (cc 57-58)

INFANT'S NAME _____ (Last) (First)

BIRTH DATE (cc 51-56) MO. DAY YR.

PHASE

INFANT'S RECORD NO. -

OB DATA (Record Type 03-cc: 8-44)

GR
PAR
Ab
LC
LMP

FIRST VISIT

Provider Type/Site
Week of Gestation
No. of visits btw. LMP & first visit
History
HGB
HCT
SEROLOGY
Type/Rh
Blood glucose
MGTT. or GTT
Rubella titre
UA
Pap smear
GC culture
Tine/PPD
CXR
Breast exam
Fundescopic
Cardiac exam
Pelvimetry

Statement of Pregnancy (cc 59)
1-wanted
2-unwanted
3-undecided
4-no statement

If unwanted or undecided (cc 60)
1-counseling
2-TAB discussed
3-TAB planned
4-TAB done

If TAB done - was pt. on family planning in 4 weeks Y N (cc 61)

Statement of risk or prognosis or pregnancy

LABOR AND DELIVERY
(Record Type 04-cc8-32)

Documented on admission:
Onset of labor
Time of show
Bleeding
Status of membranes
Length of pregnancy
EFW (es.t fetal wt.)
Contraction interval
Contraction length
Contraction
FHR
Position
Station
Cervical effacement
BP
UA

Method of Delivery:
1-Spont vag
2-Induced vag
3-Operative

Complications of mother:

Prior to discharge:
Family planning discussed
Method planned _____
Started
Infant care counseling
Nutrition/Feeding counseling
Breast feeding started Y N

Post Partum (cc 31-41)

Pain
Discharge
Dysuria
Bleeding
Breast exam
Episiorrhaphy
Uterus
BP
UA
Weight
Family planning discussed
Method planned _____
Started Y N
Breast feeding discussed
Infant care counseling

Newborn (cc 48-64)

lb. oz.
B.W.
Length
APGAR 1'
APGAR 5'

Newborn complications:

Newborn care:

Silver nitrate drops in eyes
0.5-1.0 of VITK, IM
Temp recorded daily while in nursery
Statement of risk or prognosis

(DATA COLLECTION INSTRUMENT FOR PRENATAL CARE)

RECORD TYPE 50	WEEK GESTATION (cc 8-10)	
	Provider type	01
	Pain	02
	Dysuria	03
	Discharge	04
	"Swelling"	05
	Fetal Movement	06
	Vaginal bleeding	07
	Headache	08
	Blurred vision	09
	No problems	10
	BP diastolic	11
	Weight in lbs.	12
	FHR	13
	FUNDUS	14
	EFW	15
	Edema	16
	Reflexes	17
	Position/Stat/Eng	18
	Urine protein	19
	Urine glucose	20
	Hct/Hgb	21
	Family planning	22
	Breast feeding	23
	Gen. counseling	24
	Nutrition counseling	25
	Stmt. of risk or prognosis	26
	No. of inpatient days	27
PIH - diast. BP _____		28
		29
		30
		31
		32
		33

CODES-Provider type/site

1-Sells OPD
2-MCH Clinic
3-Santa Rosa
4-San Xavier
5-Pisinimo Clinic
6-MHU
7-Sells Inpatient
8-VHN (home visit)
9-Inpatient (other than Sells)

(Reverse side of data collection form for prenatal care)

RECORD NUMBER

Sells 1-
SR 3-
Pisinimo 4-
SX 2-
(cc 1-7) IID 6-

INFANT'S NAME _____ (Last) _____ (First)

MOTHER'S NAME _____ (Last) _____ (First)

PHASE

BIRTH DATE (cc 28-33) MO. / DAY / YR.

BIRTH DATE (cc 34-39) MO. / DAY / YR.

MOTHER'S RECORD NUMBER -

COMM. OF RESIDENCE _____ (cc 40-41)

NEWBORN DATA (RECORD TYPE 01-cc 8-27)

B.S (lbs-oz)
Length (inches)
APGAR 1'
APGAR 5'
Method of delivery:
1 Spont vag
2 Induced vag
3 Operative
4 Unknown
Nutrition/Feeding couns.
Infant care counseling
Stmt. of risk or prognosis
Breast fed:
1 Yes
2 No
3 Unknown

Newborn complications:

Codes - Provider type/site
1 Sells OPD
2 MCH Clinic
3 Santa Rosa
4 San Xavier
5 Pisinimo Clinic
6 MHU
7 Sells Inpatient
8 PHN (home visit)
9 Inpatient (other than Sells)

MATERNAL DATA (RECORD TYPE 01: cc42-59)

Age
Gr.
Para
Ab
L.C.

Infant care counseling
Nutrition/Feeding couns
Family planning discussed between delivery and 8 weeks post partum
Method planned
1 IUD, 2 Pills, 3 Other
Family Planning Started
Remainded free of pregnancy for 12 months after delivery

No. of prenatal visits made

Where delivered
1 Sells 4 Other
2 U of A 5 Unknown
3 Home

RECORD TYPE 02

Age in wks. (cc 8-10)														
Provider type / site	01													
Ears	02													
Nose/throat	03													
Lungs/chest	04													
Cardiac	05													
Abdomen	06													
Hips	07													
Pulses	08													
Coordinated eye movement	09													
Normal exam	10													
Height (inches)	11													
Weight (lbs)	12													
Head circ.	13													
HCT	14													
UA	15													
DPT	16													
OPV	17													
Measles	18													
Rubella	19													
TINE/PPD	20													
Diet history	21													
Devel. history	22													
Nutrition couns.	23													
Infant care couns.	24													
No. of Inpatient days	25													
INTERCURRENT ILLNESS	26													
	27													
	28													
	29													
	30													
	31													
	32													

(DATA COLLECTION INSTRUMENT FOR INFANT CARE)

PATIENTS NAME _____ BIRTH DATE _____
LAST FIRST MIDDLE

MEDICAL RECORD NUMBER _____ SOCIAL SECURITY # _____

COMMUNITY OF RESIDENCE _____

COMMUNITIES WHERE MEDICAL RECORDS HAVE BEEN LOCATED _____

MEDICAL CARE EVALUATION PROJECT COHORT _____

LACERATIONS OF SCALP AND EXTREMITIES
MEDICAL RECORD AUDIT INSTRUMENT

TARGET POPULATION: Over 6 years

PRIORITY GROUP:

STUDY PERIOD: 1 July 75 - 1 July 76

1. Did patient contact system for a laceration of scalp or extremity?

YES NO

Provider MD _____
PHN _____
PA _____
CHA _____

2. Was all of the following documented?

___ Time since laceration
___ Cause of laceration (blunt trauma, glass, dog bite, etc.)
___ Description of wound (clean, deep, jagged, etc.)

YES NO

3. Was the laceration on the scalp?

YES NO

3.1 Was statement of underlying skull fracture made or an x-ray taken?

YES NO
Go to question #5

4. Was laceration stated as superficial?

YES NO

4.1 Was there documentation of sensory, vascular, and motor function distal to the laceration?

YES NO

5. Had patient received tetanus booster within 5 years?

YES NO

5.1 Was .5cc adsorbed tetanus toxoid given?

YES NO

6. Was the wound sutured?

YES NO

6.1 Was patient seen within 5-15 days (for any reason)?

YES NO

Provide MD _____
PHN _____
PA _____
CHA _____

6.2 Was statement of wound healing made?

YES NO

7. Was there evidence of wound infection within 2 weeks?

YES NO

PATIENTS NAME _____ BIRTH DATE _____
LAST FIRST MIDDLE

MEDICAL RECORD NUMBER _____ SOCIAL SECURITY # _____

COMMUNITY OF RESIDENCE _____

COMMUNITIES WHERE MEDICAL RECORDS HAVE BEEN LOCATED _____

MEDICAL CARE EVALUATION PROJECT COHORT _____

STREPTOCOCCAL DISEASE
MEDICAL RECORD AUDIT INSTRUMENT

TARGET POPULATION: Over 6 years of age

STUDY PERIOD: 1 July 75 - 1 July 76

CHECK QUARTER RESEARCH WAS BEGUN: ___ 1 July 75, ___ 1 Sept. 75, ___ 1 Jan. 76; ___ 1 Mar. 7(

(circle episode found)

1.0 Did patient contact system for [redacted] pharnygitis? ([redacted])
YES NO

Circle provider type
MD, PA, CHA, PHN, OTHER _____

2.0 Was a throat culture taken within 2 days?
YES NO

2.1 Did patient receive antibiotic?
YES NO

2.2 Was visit made 0-15 days after treatment?
YES NO

2.3 Was there evidence that strep was addressed as a problem?
YES NO

2.4 Was throat culture taken?
YES NO

3.0 Was culture positive?
YES NO Couldn't find result at facility

4.0 Did the patient receive an antibiotic within 5 days of positive culture?
YES NO

4.1 Was patient allergic to penicillin/ampicillin?
YES NO UNCERTAIN

4.2 Was antibiotic a) LA Bicillin 1.2 mu IM or 600,000 mu for children less than 60 lbs or 9 years or less in age
b) Oral pen x10 day
c) Erythromycin QID x10 days
d) Other

5.0 Was a visit made within 21 days after treatment started?
YES NO

6.0 Was strep management a purpose of the visit?
YES NO

7.0 Was culture taken?
YES NO

8.0 Was culture positive?
YES NO Couldn't find result at facility

PATIENTS NAME _____ BIRTH DATE _____
LAST FIRST MIDDLE

MEDICAL RECORD NUMBER _____ SOCIAL SECURITY # _____

COMMUNITY OF RESIDENCE _____

COMMUNITIES WHERE MEDICAL RECORDS HAVE BEEN LOCATED _____

MEDICAL CARE EVALUATION PROJECT COHORT _____

RHEUMATIC FEVER
MEDICAL RECORD AUDIT INSTRUMENT

TARGET POPULATION: All patients with rheumatic fever who should be on prophylaxis as per registry

PATIENTS AGE: _____

WHEN LAST EPISODE OF ARF: _____
Month/Year

NUMBER OF EPISODES ARF: _____

Significant cardiac sequela
_____

1.0 Was patient treated prophylactically with LA bicillin 1.2 mu IM?

YES NO

2.0 Was patient allergic to penicillin/ampicillin?

YES NO - go directly to question 3.1

3.0 Was patient treated with either (Circle appropriate)

Sulfadiazine 1 gram g.d. (0.5 gr. under 60 lb.)
Erthromycin 250 mg per QID

YES NO

3.1 What was method of prophylaxis?

If LA Bicillin: Coverage rate _____
If oral penicillin: Coverage rate _____
If Erythromycin: Coverage rate _____
If oral Sulfadiazine: Coverage rate _____

4.0 Was patient off prophylaxis 4 or more continuous weeks?

YES NO

5.0 Did patient make contact with system while off prohylaxis?

YES NO

Provider type MD _____
PHN _____
CHA _____
PA _____

6.0 Did provider renew prophylaxis?

YES NO

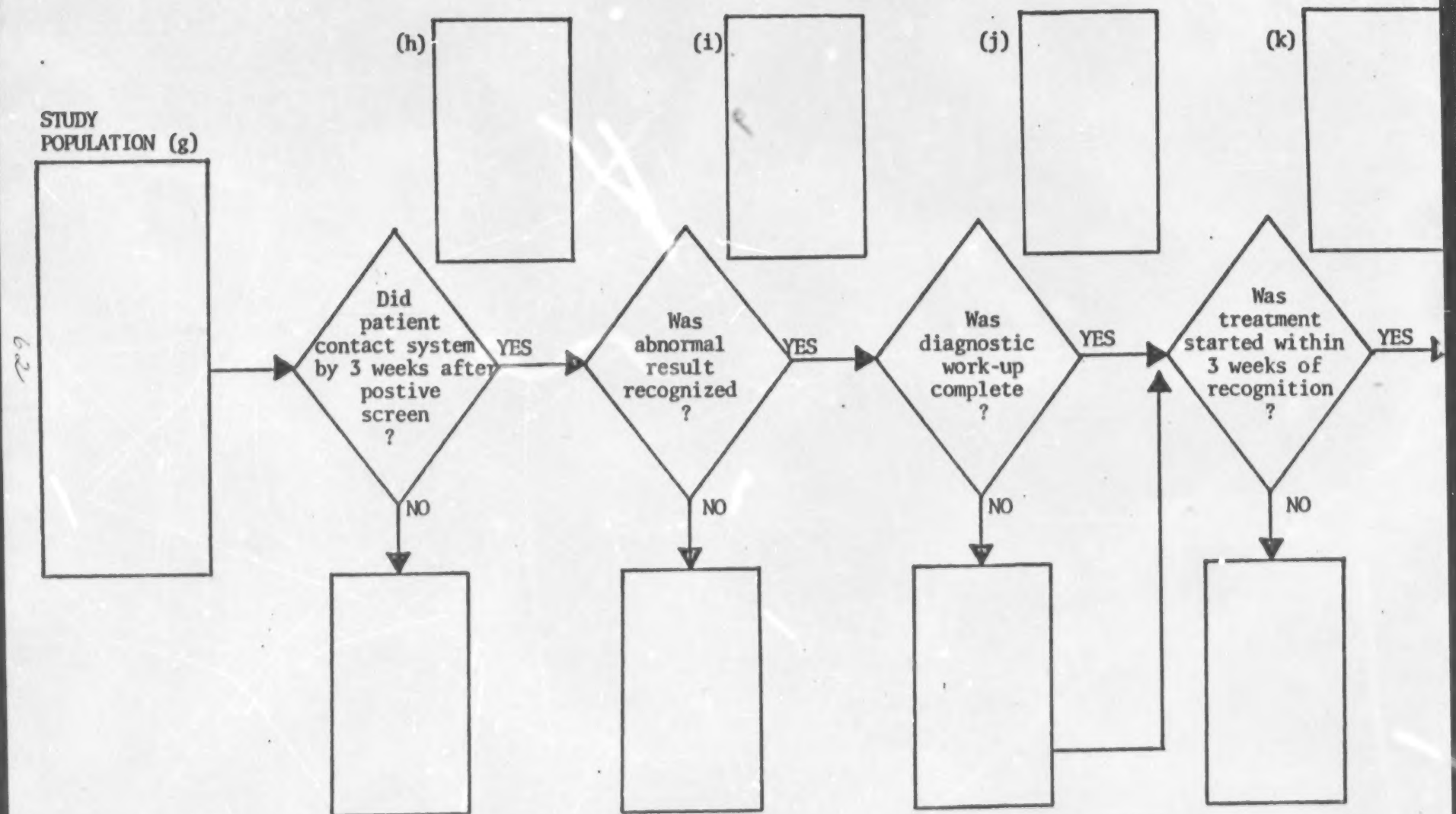
7.0 Did patient have a recurrence of ARF during audit year?

YES NO

DATE _____

Fe-DEFICIENCY ANEMIA
(Diagnosis and Management)

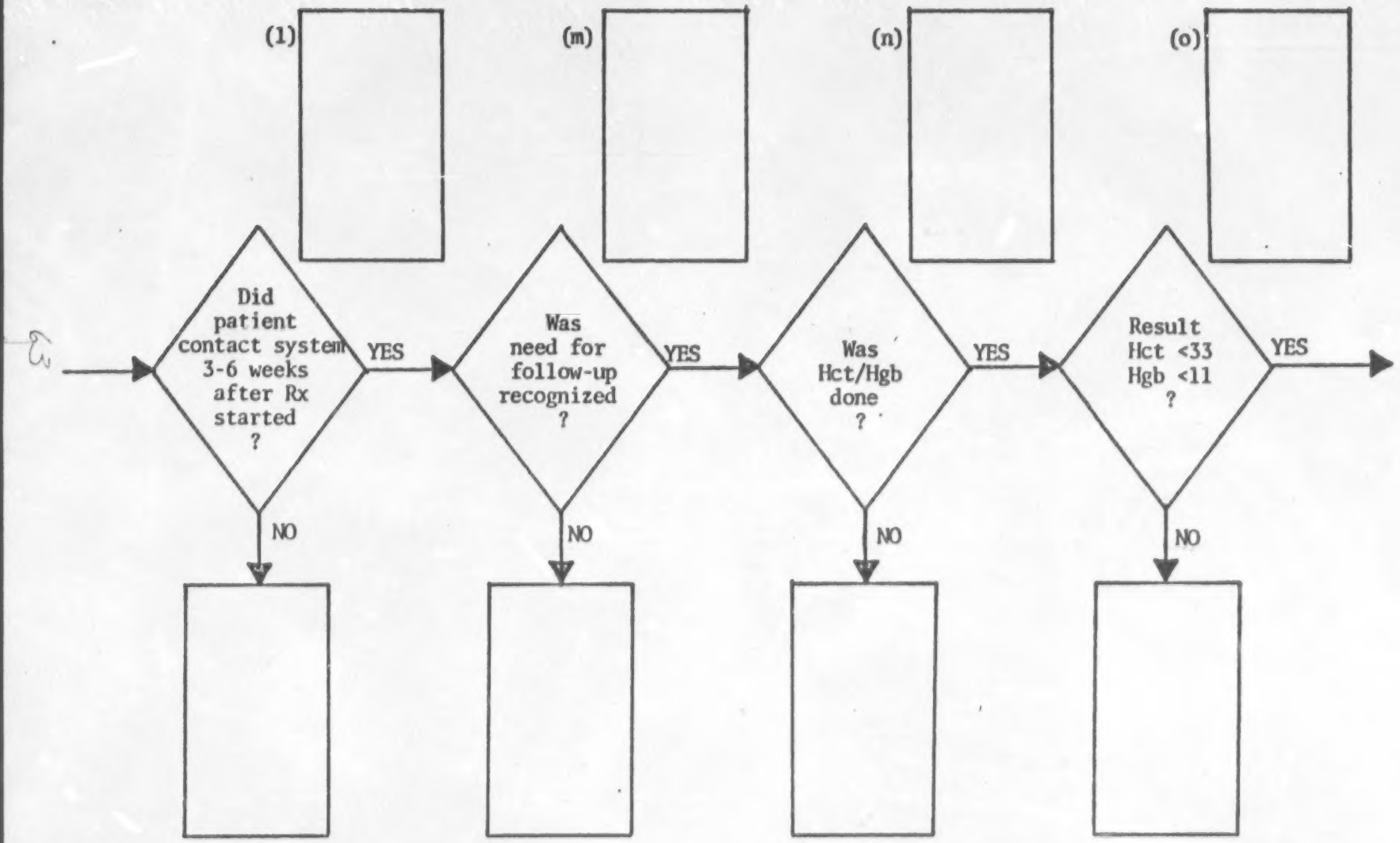
SITE_____



62

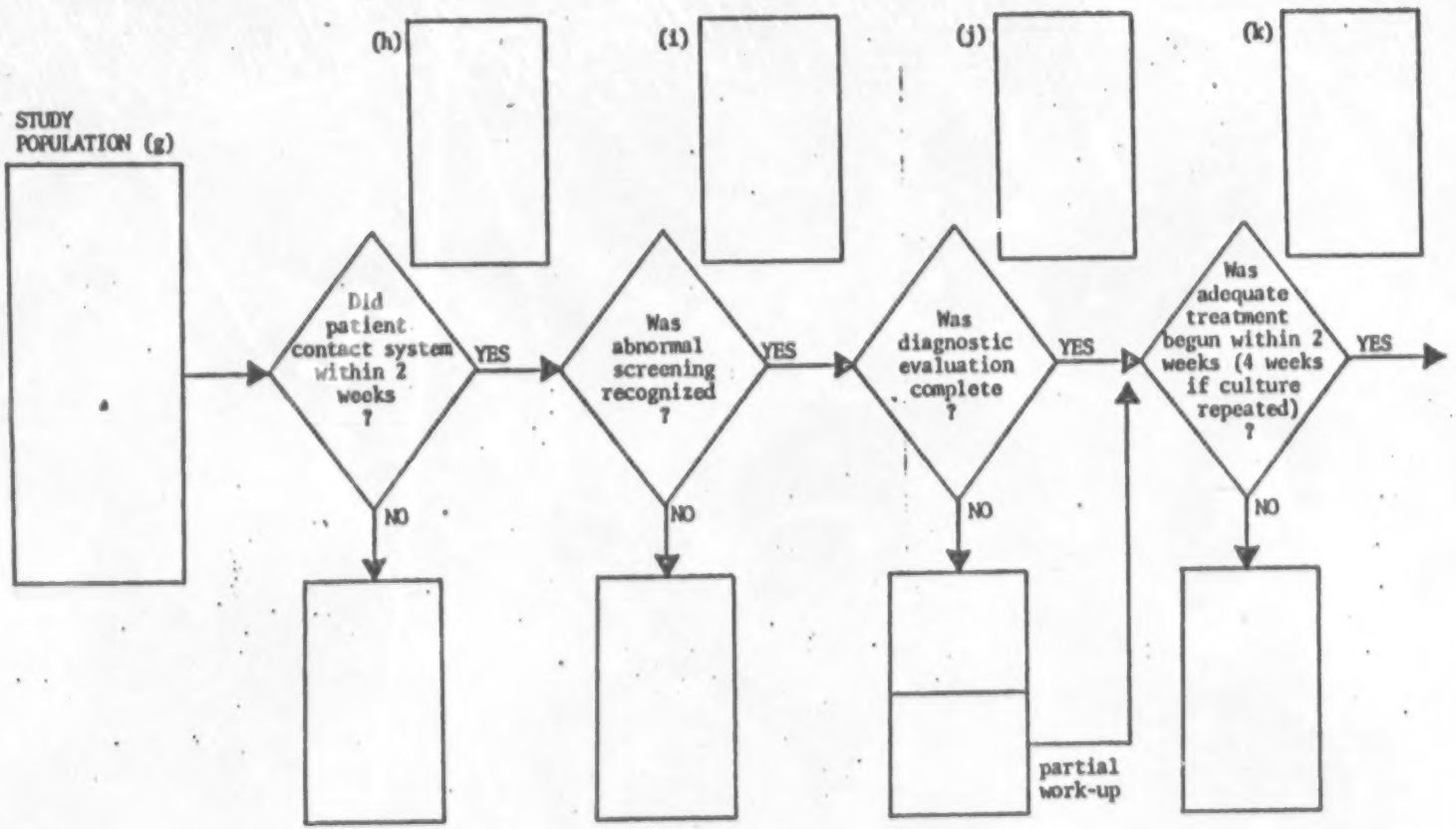
Fe-DEFICIENCY ANEMIA

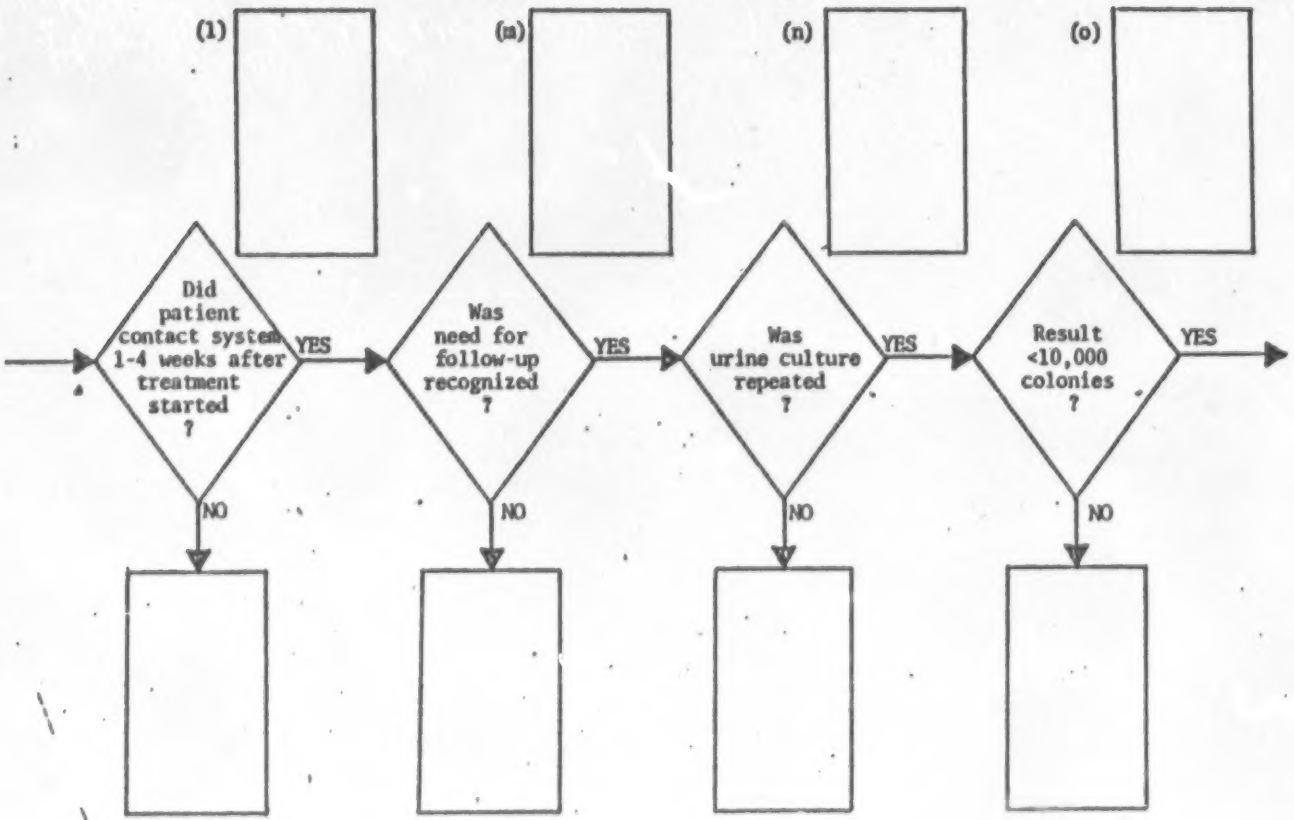
(Diagnosis and Management)
(Continued)



URINARY TRACT INFECTION
(Diagnosis and Management)

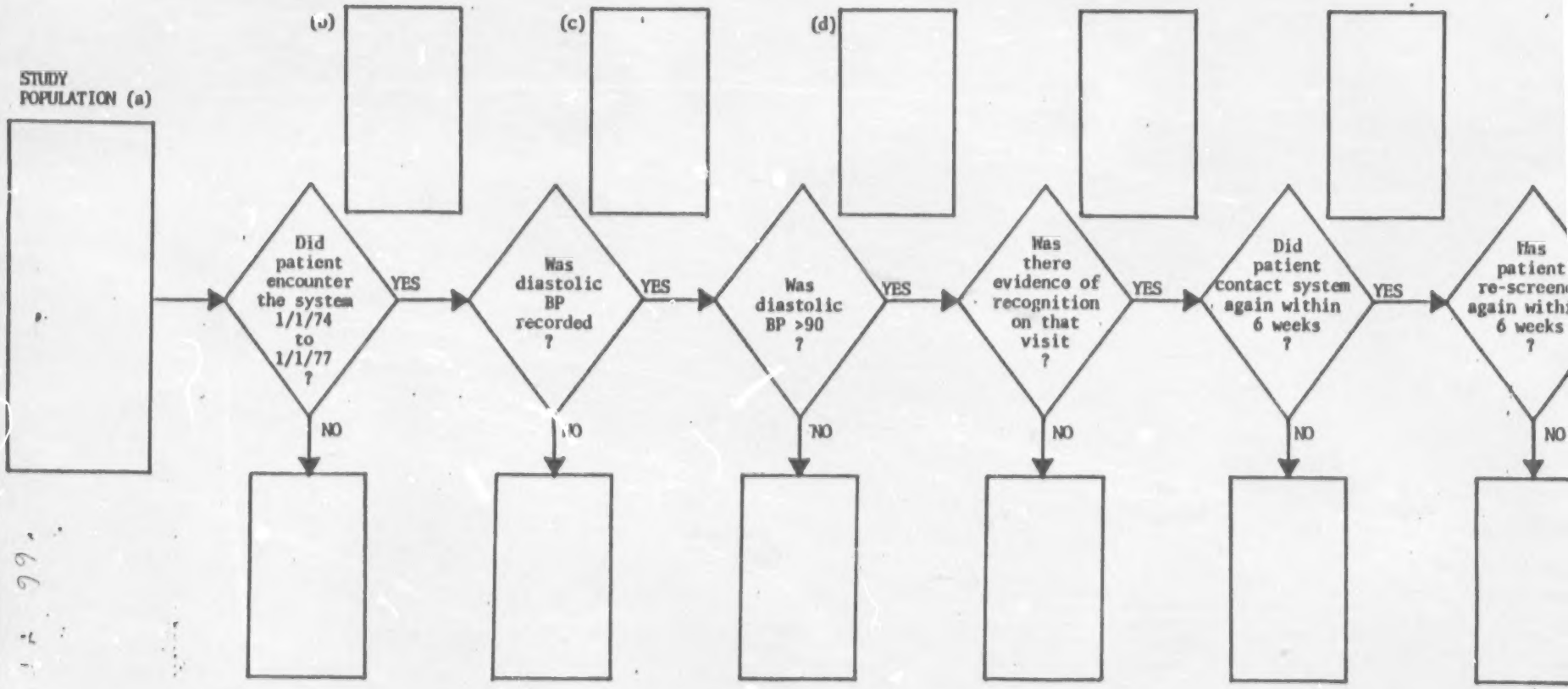
SITE _____




(l)
(m)
(n)
(o)
Did patient contact system 1-4 weeks after treatment started ?
YES
Was need for follow-up recognized ?
YES
Was urine culture repeated ?
YES
Result <10,000 colonies ?
YES
NO
NO
NO
NO

SITE _____

HYPERTENSION - SCREENING



VISUAL ACUITY - SCREENING AND REFERRAL